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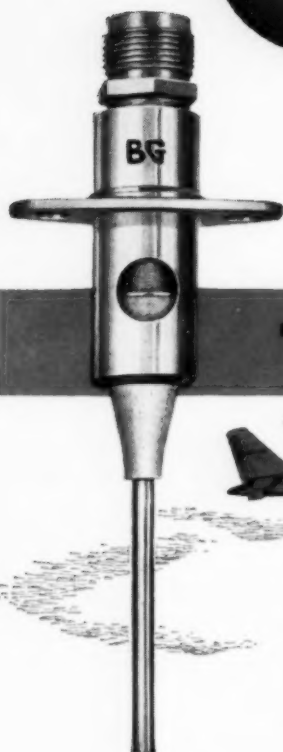


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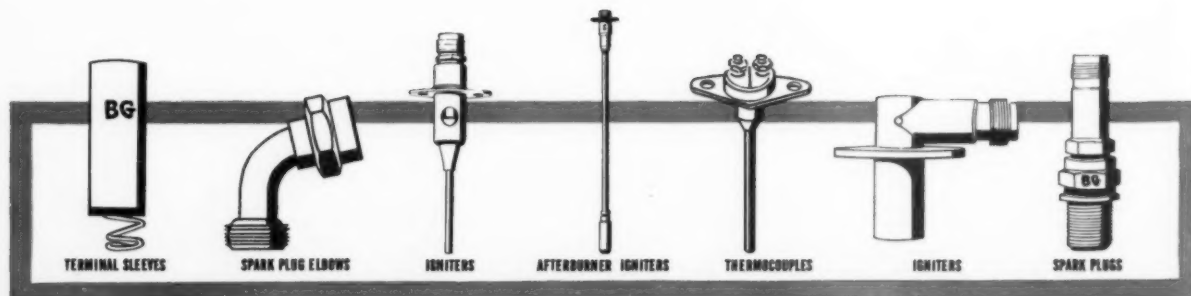
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American Aviation

NEWSLETTER

Volume 15 Number 38

February 18, 1962

Further congestion at New York's already crowded airports was inevitable as the order came to close the Newark facility after the third airline crash in the Newark-Elizabeth area in two months.

Newark Airport, which in 1951 handled 100,177 landings and take-offs (or almost a third of the 317,833 movements at LaGuardia, Idlewild and Newark) seemed destined to be shut down by the Port of New York Authority order for an extended period, possibly until a new runway, which will divert most of its traffic around Elizabeth, is completed.

LaGuardia (183,243 movements last year) and **Idlewild** (34,413 movements) almost certainly will find themselves unable to handle the added traffic and **Westchester Airport**, which is equipped with an ILS system and is currently used as a New York alternate, is being considered while the Newark ban is on.

As Federal agencies move to probe the National Airlines DC-6 accident, Congressional pressure increased. New Jersey's Republican senators, Robert C. Hendrickson and H. Alexander Smith called for an end to the "needless loss of life" at Elizabeth. And Rep. Alfred D. Sieminski (D., N. J.) introduced a resolution to strip the PNYA of jurisdiction over the Newark field and subject it to a full-scale probe. (see story on page 19).

Shortage of funds, besides causing the lay-off of about 65 air traffic controllers will also force CAA to postpone commissioning of several safety aids. Lack of \$450,000 will delay 38 ILS systems, 12 ASR's, one PAR, two control towers, five communications stations, five neon light and two high-intensity approach light installations, six fan markers and five radio stations. All are scheduled for early completion but funds to man them will be unavailable until July or later.

Increases in air freight rates averaging 25% will be effected by Slick Airways in mid-April. The Flying Tiger Line has also indicated that it will make some increases. Action could be the beginning of an upward trend in rates for the industry.

Airlines in need of complete engines and propellers will now be able to obtain them for emergency use from the Navy and Air Force. The two military departments have agreed to add these items to the list of parts which airlines may apply for through CAA.

Two aviation executives are on record against the profit margins their companies may earn under present government policies.

Consolidated Vultee's board chairman, Floyd B. Odium, declares most of Convair's work is done for the armed forces on a cost plus fixed fee basis, with the fee amounting to about 4% after all disallowances are taken into account. Under present tax laws, up to 82% of the fee on added work is taken by income and excess profits taxes, leaving about three-fourths of 1% for stockholders on any new work Convair takes on.

Curtiss-Wright's president and board chairman, Roy T. Hurley, points out his military contracts yield only about 3½% after taxes. He cites the 13.8% aircraft suppliers earned on invested capital in 1950, the 13.3% aircraft customers received on their investment the same year and compares it with the 6% return on capital C-W received.

Hurley also calls for a new government policy permitting the aircraft industry to develop steadily in both peace and war periods, as well as during partial mobilization. He claims aircraft firms should be expanded by "accelerated amortization in cost rather than taxes."

He maintains present policies discourage reduction in costs and offer little incentive to the efficient aircraft builder. "The emphasis in regulation and procedure," he maintains, "should be on quality, delivery and price, with allowances for profit margins after taxes sufficient to pay for the use of capital, to attract capital, to create incentive—all aimed to increase the industry's productive ability and productive machine."

Russia's highly secret intercontinental bomber is known as the TuG-75, according to reports from eastern Europe. Obviously designed by Tupolev, who copied the Boeing B-29 into the TU-4, and Gurevich, who was co-designer on the MiG-15, the new Soviet very heavy swept-wing bomber is reported to be powered by six turboprop engines, with 30 rockets being used to help the plane take off.

One report states the Russians have a wing of TuG-75's based in the Ural Mountains and adds that the planes supposedly could reach the U. S. from that spot, with a load of atomic bombs.

Only other information about the plane thus far is that its wing span is about 200 feet and its length 190 feet. America's only present intercontinental bomber, the B-36, has a 230-foot wing span and a length of 162 feet.

MANUFACTURE

Ford Motor Co. has been licensed to produce the Westinghouse J-40 jet engine and Lincoln-Mercury Division will soon start a \$50 million plant at Romulus, Mich., to produce it.

First York Corp. now owns 213,938 shares of Bell Aircraft Corp. common stock, a 48.63% interest.

At least two plane builders now have more employees than they did at their wartime peaks. Northrop, which had 10,000 in 1943, now has more than 16,000 on the payroll. North American, with 25,162 workers in 1943, has passed the 26,000 mark at the California plant alone.

Orders for Sperry airborne engine analyzers went over 2,000 as the USAF ordered 350 for use on Convair B-36F's and Douglas C-124's.

North American Aviation will close out production at Long Beach, Calif., Apr. 1 and return its part of the 2,780,000 square foot plant to Douglas for production of the C-124. NAA originally leased the facility for B-45 output but later used it for F-86A repairs and modification of the T-6G trainer.

General Electric Co.'s Louisville plant, which had been expected to produce jet parts, will produce home appliances because the USAF's rescheduling program will enable existing plants to handle the work.

Electric Boat Co.'s board of directors has elected its president, John Jay Hopkins, to chairman of the board as well.

Three Bendix Aviation Corp. radar experts are going to England for the Mutual Security Agency to help the British adapt their own radar parts to Bendix-built ground controlled approach sets now in operation at British airports. The GCA sets were lend-leased during the war and now need spare parts. Britain had asked for \$16 million in radar parts to keep the equipment operating.

PLANES AND EQUIPMENT

CAB, after its mid-year Review of Airworthiness, outlined turbine engine certification requirements, required a flight engineer station in large transports, raised the crash load factors of seat and berth attachments by 33%, added requirements for fire extinguishers in transports, required maximum allowable air speed indicators for planes which have limitations resulting from compressibility hazards, required use of 150% or more of the reported wind component in down wind take-offs and landings when computing distance limitations, established glider airworthiness regulations and insisted that multi-engine rotorcraft be able to land safely even if all power fails during normal operating conditions.

Although the Convair Turbo-Liner made its first flight a year ago, only 15 hours flight time have been logged on the plane. An additional 95 hours have been flown on other Convair turboprop planes, including 45 on the XP5Y-1 flying boat.

First formal delivery of the deHavilland Comet was made to BOAC six months ahead of schedule. Airline, however, has been using

Comets on loan from the Supply Ministry for training and proving flights.

Boeing's XB-52 eight jet bomber has started taxi tests but its sister ship, the YB-52, will probably fly first. Much flight testing equipment had not yet been delivered when the X rolled out in November.

Consolidated Vultee hinted in its annual report it is "well advanced" in preparations to produce a successor to the B-36 and YB-60 intercontinental bomber.

Order for a "twin jet fighter" has been granted to McDonnell by the USAF. The plane is the F-101, an improved F-88 Voodoo.

USAF has placed orders for reconnaissance versions of the Navy A3D twin jet attack bomber and has designated the plane the RB-66. Navy says the plane has swept wings, carries a crew of three and is in the 600-700 mph class.

Seaboard and Western Airlines' DC-4's had a daily utilization of 13 hours, six minutes in 1951. The transports flew 6,717,391 revenue miles and logged 32,943 hours, nine minutes of flying time.

Last Convair B-36 has been modernized to the D model with four General Electric J-47 engines at the firm's San Diego plant.

Radio control system for airborne lifeboats, which enables a plane's radio signal to steer the boat to survivors, has been accepted by the USAF after tests. Westinghouse developed the system.

AIR LINES

Capital-Northwest preliminary merger agreement provides for establishment of a five-man executive committee of the board of directors, to be headed by Charles H. Murchison, general counsel of Capital. Three members will be named by NWA's present board, and two, including Murchison, by Capital's board. During intervals between meetings of the board of the combined company, the committee may exercise all powers of the board in such manner as the committee "shall deem best for the interests of the corporation in all cases in which specific directions shall not have been given by the board . . ." New board will have nine members designated by NWA, seven by Capital. Murchison will also be general counsel of the merged firm.

MILITARY

Air Force Secretary Thomas K. Finletter says the new stretched-out aircraft program does not meet the goals the Joint Chiefs of Staff consider desirable but that the date when the 143-wing air force will come into being is "acceptable."

USAF obligated \$7.6 billion of the total \$18 billion defense obligation during the first half of fiscal 1952. During the first 18 months after Korea, Air Force obligated \$20.8 billion for procurement and construction, or 39% of the Defense Department's total of \$53.9 billion.

Aircraft accident rate for the USAF in 1951 was 32 per 100,000 hours flown, the lowest in history. Figures, which compare with 34 for 1949 and

(Continued opposite page 66)

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February 18, 1952 Vol. 15 No. 38



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other publications

American Aviation Daily (including **International Aviation**): Published daily except Saturdays, Sundays and holidays. Subscriptions: \$18 one month; \$200 one year. Daniel S. Wentz II, managing editor.

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Editorial

Mergers and Economics

The expected but long-awaited day of important airline mergers seems to have arrived.

In our view mergers are coming none too soon. As might be expected, they have occurred out of economic necessity.

There are three observations we'd like to make on the present merger trend. One is the reasons why mergers *should* occur. Another is the reasons why they *have* occurred. And the third is the outlook for their being consummated.

by
W. W. P.

• **Desirability.** A busy man with a recurring ailment knows full well that he should visit a clinic for a check-up. He knows he'll have to do it sooner or later. But the pressure of daily business keeps postponing the day of reckoning.

The need for reducing the number of trunklines has been recognized by almost all industry executives and by many in the government. The initial national route system was laid out in the DC-3 era. The DC-3 pattern became obsolete with the introduction of faster, larger and more efficient airplanes which constantly reduced the ton-mile costs of those major carriers which could put the bigger and faster equipment to good use and which tapped the major traffic markets of the country.

Management efficiency *by itself* was unable to stop the increasing disparity between the long-haul carriers and the short-haul regionals. Some of the smaller trunks were actually more efficient than several of the trunks. But without the ability to tap bigger markets and utilize more efficient equipment, the regionals were more dependent upon mail pay.

The drive by Congress and the CAB to reform the 16 trunks into self-sufficient systems— independent of subsidy mail pay—began several years ago. But traffic boomed following the start of war in Korea. The boom, in fact, postponed the day of reckoning. Yet the basic facts remained unaltered. In the long run the 12 regional trunks had but two choices—to join in more self-sufficient systems or be transferred into a local service or feeder category with continued mail pay support. Or perhaps there is a third choice—remaining "as is" and obtaining subsidy mail pay under the white spotlight of publicity.

But knowing what the cure is and doing something about it are two different things. Most of the airline heads are pioneers, some of them promoters who forged ahead against heavy obstacles to build up their airlines into good and sound organizations. Conflicting personalities and corporate values were stumbling blocks in merger discussions. Almost all top executives wanted to remain in top executive capacities. The urge to merge, then, was tempered by such natural conflicts.

• **Necessity.** Despite the upsurge in business in 1950 and 1951 which postponed tangible action on mergers, there were other factors at work

which have resulted in a flock of agreements recently.

One is the subsidy separation plans of Congress and CAB. It is true in a practical sense that the CAB will probably not permit an airline to go into bankruptcy. It will come to the rescue. But the subsidy peg is no longer automatic and hidden. Financial aid will be given under a spotlight. And the CAB has shown increasing boldness in ordering merger investigations. The CAB wants to have a good record to show in this election year of 1952 that it has eliminated the bulk of subsidy—the kind of mail pay that rises and falls almost automatically as the welfare of individual carriers rises and falls.

There is no mistaking the intent and objectives of the drive to make the trunks as self-sufficient as possible. Local service lines are now to get the mail pay support that used to go to the trunks.

But this isn't all. The first economic danger signs in the industry have appeared after three years of lowering costs and higher traffic. The red flags have been raised in the research offices of major airlines. The year 1951 was the best the industry has had in its history—but 1952 will be a different story. The crisis is not upon it yet, but the danger signals are fluttering in the wind.

Danger Signals

First and foremost of the danger signals is the trend in productivity per employe. Since the early 1940's this trend has been favorable. High load factors in World War II and introduction of new equipment after the war kept the ton-mile productivity per employe going steadily upwards. This trend is now altering. If it isn't going down yet, it has leveled off.

Secondly, airline costs per ton-mile had been going down steadily, especially since the beginning of 1949. It may not be generally known, but the truth is that this downward trend stopped last summer. The trend in ton-mile costs has gone upwards for the four major carriers during the past seven or eight months.

The fact is that costs are increasing at a greater rate than traffic revenues. This is true especially starting January of this year, but the charts show that increased costs began out-pacing revenue gains some months ago. The main benefits of more efficient equipment have been obtained. Fares have gone lower in the face of general inflation. But from now on, the airlines will follow the national inflationary trend upward.

It is easy to be misled by the big drive for low coach fares. The CAB is invariably six months to a year behind industry economic trends. It is still plugging for more low fares. Yet the facts are very clear that the \$99 transcontinental coach fare is obsolete right now. Even \$110 is not realistic. The low 1952 trans-Atlantic coach fares are out of line. Back in 1945 the CAB ordered a fare reduction at the very start of the national inflationary spiral and the industry was in serious financial trouble by 1947. There is a delicate economic balance in air transportation not often appreciated by

Editorial

government rate-makers. Profits can occur rapidly—but losses can occur just as fast.

Some of the regional airlines have been aware of the economic picture, and took remedial steps. Within recent weeks four important carriers took the merger plunge. The reasons for action are not all the same, but the net result is good. The CAB itself was responsible for the Braniff-Mid-Continent merger, although it didn't propose it. The CAB ordered a merger investigation involving Mid-Continent and Continental. MCA didn't like it. But it took the cue and got together with Braniff.

Merger proceedings now involve most of the trunks. When Congress passed the Civil Aeronautics Act of 1938 it gave permanent "grandfather" routes to the then existing 16 carriers. Of these original 16, four (American, United, Eastern and TWA) are known as the "Big Four." Of the remaining 12, all but one, Chicago and Southern, are currently engaged or involved in a merger proceeding although several of these are more technical than actual. But eight of the 12 have reached merger agreements worthy of the name.

Few Obstacles

• **The Outlook.** In view of the widespread recognition in industry and government that mergers are desirable, and the injunction by Congress in the Civil Aeronautics Act of 1938 that mergers shall be approved unless found not to be in the public interest, the CAB should find few obstacles in its path to approve *this year* at least some of the mergers now ready for the procedural stage. It should move as rapidly as possible.

• **The Braniff-Mid-Continent** merger should meet with a minimum of opposition. Although there is virtually no parallel or duplicating mileage, the two systems fit together neatly. Efficiency and utilization can be vastly improved with perhaps only minor route adjustments. It is primarily a case of bringing together two distinct regional patterns in one area of the country.

• **The Northwest-Capital** merger also looks logical and beneficial at first glance. A sizeable amount of duplicating mileage would be eliminated, principally Twin Cities-Washington. Although the two companies have an odd assortment of aircraft, an eventual standardization and resulting efficiency can be obtained. It looked for a while as though Northwest would climb out of its troubles of a year ago, but the cards were stacked pretty high. There is a lot to be said for the consolidation.

• **The National-Colonial** proposal would solve at least one of New England's problems. Two small regional carriers in a small short-haul part of the country have found economic self-sufficiency impossible. Colonial is one of these. The merger with National, however, may run into opposition, chiefly because of the multitude of troubles originating in the former management. The former president, Sig Janas, is being sued by the company. Janas, in turn, is said to oppose a merger. His 40,000 shares of stock may have considerable strength at

the April 16 annual stockholders' meeting. The outcome is not clear—but the remedy for Colonial is. It must join a larger system sooner or later.

• **The Delta-Northeast** proposal, the first of the series of merger agreements to reach the CAB procedural stage, takes on markedly new appeal with the Capital-Northwest agreement. Perhaps anticipating an eventual Capital-Northwest merger, the CAB had initiated a suggestion that Capital's southern routes (to Atlanta, New Orleans and Memphis) be integrated into the Delta-Northeast proceeding. These southern routes with their entries into Washington and into New York via Pittsburgh, would provide the necessary mileage with which to link Delta in the south and Northeast in New England, forming a new system in the east. Nothing was said in the Capital-Northwest announcement about Capital's southern routes, but now that Capital's outlook is toward the populated north and the west and to the Orient, it would seem to have much less interest in its thin routes to the deep south.

• **Western and Inland** are currently taking the last steps to merge Inland completely into the Western system. Although Inland has long been a subsidiary, it has nonetheless remained on the books as one of the original 16 trunklines.

Two other regional trunks remain in this discussion. Continental is still technically involved in the Continental-MCA consolidation order, but following the Braniff-MCA merger, the CAB put the Continental proceeding on the shelf. So in actuality Continental remains without any real involvement in a merger negotiation. Its destiny would seem to be either with Western or with the Braniff-MCA combination—or possibly as part of one of the transcontinental systems needing more regional outlets.

Sole Exception

• **Chicago and Southern Air Lines** remains so far without any formal involvement in mergers, although informal negotiations have been carried on. Its destiny would seem to be either with the combination to the west (Braniff-MCA) or with Delta to the east. It is not likely to find salvation with a transcontinental trunk because of its exclusively north-south characteristics.

Both industry and CAB have unequalled opportunities to re-make the bulk of the nation's airline network *now* while there is still time. The rash of involved interchanges is nothing but an economic blind alley and solves but few of the fundamental problems. It is possible that another serious financial crisis can be avoided by the mergers now up for approval. In any event, the drive for economic self-sufficiency will be unrelenting and it is the economics of air transportation which makes it so. We think the industry has moved a long step forward by bringing about the merger proposals instituted to date.

... WAYNE W. PARRISH

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Molded lips that seal tight come open with a zip

Seal that saves muscle zips off to save time (1). In the Boeing B-47, seals were needed between elevator and stabilizer, rudder and stabilizer, and aileron and wing to make manual control easier. But with ordinary seals, hundreds of screws would have to be removed every time a control surface had to be taken off. B. F. Goodrich suggested Pressure Sealing Zippers for the flaps. Their molded rubber lips successfully prevented air flow through the hinge area. And mechanics unzip the flaps in seconds.

It lets men in—keeps fumes out (2). Keeping engine fumes out of a jet's

cockpit called for a partition between cockpit and fuselage. But with a standard metal partition, mechanics would have to fuss with bolts or screws to get in for maintenance. BFG engineers' answer—a fume curtain sealed with a Pressure Sealing Zipper. The zipper's molded rubber lips provide a 100% effective seal. The curtain can be zipped open in seconds.

Shuts up torrent of hot air (3). Designers wanted to make the hot air duct in the Douglas C-124 in 6-foot sections.

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Letters

Jobless

To The Editor:

I do not intend this letter to be a revenge-seeking instrument. It is written with the hope that you, through your medium, can help a rather odd, if not dangerous, situation.

Today, when air traffic is increasing by leaps and bounds, and greater safety is necessary, the CAA is "furloughing" trained air traffic controllers. This action is a result of money shortages for salaries. The CAA itself does not wish to do so, but has its hands tied by this lack of money and is taking the only course of action open to them.

Thirty-five are being laid off as of February 23 in the 2nd Civil Service District alone. Many of us have left other jobs to work with the CAA; have moved our families, sold homes, and moved furniture at our own expense for these jobs. Now we are facing unemployment in cities and towns away from home. The rub is that a great majority will not return to the CAA when and if it is possible and air traffic will suffer. It's a shame for all concerned.

A TRAFFIC CONTROLLER

(CAA has told 200 people in all divisions that they'll be furloughed Feb. 23 due to lack of funds. About 65 are in traffic control; communicators and others from the airways division are also affected. CAA hopes the people won't be laid off, but since funds haven't yet been made available, it has given them the 30-day notice required by law. Traffic control personnel involved are all trainees brought in during recent critical shortage of controllers caused by military recalls.—Ed.)

Placing Students

To the Editor:

I read the article on college graduates and airline employment in the Jan. 21 issue with a great deal of interest. Our experience with air transportation students here at Western Michigan College has been somewhat different than Mr. Gifford's. Air transportation is our only specialized transportation curriculum.

Our air transportation students here at Western Michigan College may follow either of two majors, one in business with aviation as a minor or one in aviation with business as a minor. The second minor field may be either psychology or economics. The aviation courses include, to a large extent, aviation mechanic's training. Some of our transportation students have spent a few additional hours of work to qualify them for an A & E mechanic's certificate in our CAA approved school. These have obtained the best jobs.

In contrast to Mr. Gifford's experience, we have had many more requests for our air transportation graduates than we have students. Each student has had, therefore, an opportunity to look over several different jobs in the air transportation field with the airlines.

Many of our air transportation

graduates are now holding airline positions. However, as pointed out in your article, these students had to start in the low paying jobs and work up.

We have found that some of our students were either unwilling or, because of economic factors, unable to take starting jobs with the airlines. These students have, for the most part, made use of their training by obtaining higher paying starting jobs with manufacturers in the aircraft industry. A few of our air transportation graduates now have no connection with aviation but are making good in other lines of business.

HERBERT E. ELLINGER

Asst. Professor Aviation Education
Western Michigan College
Kalamazoo, Mich.

A Graduate's View

To The Editor:

Regarding the article in your Jan. 21 issue on "Are Airlines High-Hatting College Grads?"

I went through the period of trying to obtain employment in the airline industry. I am a 1949 air transportation graduate of Purdue University. Purdue's air transportation course is one of the first and the finest in the country . . . In addition I had retail sales experience and spent 26 months in the Air Force.

In reference to the statements made by the eight honorable gentlemen of the airlines concerning starting at the bottom, all the fellows in my class expected to start at the bottom . . .

Did the airlines actually expect a man with a family to go to work in this day and age of high prices for \$145 to \$165 a month? These were the wages offered to me. With this type of reception by the airline industry, I went to work as a furniture salesman, knowing nothing about furniture, and earned twice the salary from the start.

We did not feel we were any better than anyone else—but we did feel that the four years of our lives invested in special training certainly entitled us to be treated better than a teen-ager out of high school with no experience and background.

The answer I expect from the eight airline men to the above statement is: "No, we don't group you with high-school teen-agers." Now what am I to think and who am I to believe? When I had interviews with personnel agents of the airlines I got somewhat the same answer from each when I questioned the low salary offer. They told me that frankly they were not interested in college graduates—they preferred high school graduates who were content with staying put, who did only what they were told to do and did not think.

This, I think, is the crux of the whole airline industry trouble. They are afraid to pay for brains. I feel this is why the airlines have been in financial trouble all these years. In a way they resemble the U. S. Government—hoping for top men but paying medi-

ocre salaries and getting mediocre people. A decent wage scale would draw men of worth to their doors.

Right now I am working for an aircraft company as a junior engineer, a job which I am less qualified to fill than that of a sales agent for an airline, but I am receiving almost three times as much money as I was offered by the airlines.

MONROE P. EPSTEIN

Los Angeles, Calif.

Two Experimented

To the Editor:

. . . In March of 1950 I sent a letter to Mr. Parrish with an idea that had to do with . . . an "on the job training" program between an airline and my school. Henceforth I will refer to them as X school and Y airline because I didn't write for permission to use their names.

Basically it is this. Two of us from X school went over to Y airline and worked with their supervisors at the airport and at the reservations office in the city and tried to integrate their business methods with what we were learning in school as majors in the field of Air Transportation. This was not a field trip. We put on coveralls or suits depending on what the job called for and worked right with the men employed by this airline. It is surprising what we learned in that six or seven week ends and it is probably just as surprising what that airline learned about us—I'll bet a lot more than an application blank will tell. We did this on our own time, got no pay, and didn't ask for a job.

What They Learned

But aside from the fact that we learned about cargo and reservations as an actual airline handles it, let's see what other things were learned. Y airline saw that we were willing to spend our free time to learn the basic concepts of the industry thereby proving that we knew we couldn't start at the top. That particular airline learned how we dressed, how well we met people, how much we really wanted to learn and what kind of an employee we would probably make. What did we learn? We formulated an opinion of that airline, its services and employees, we learned that an airline is big business, not a glamour outfit, we acquired experience that would help us later on and we got a pretty good idea as to whether or not we wanted to work for that company. And a satisfied employee is usually one that is content with the company with whom he is working.

When is there a better time to find out about employee and employer than that mentioned in the experiment above? If the airlines could get together and work out a program with the schools whereby the students in their last year could give free time to the airlines to do anything from handle cargo to accept reservations a lot of things could be

(Continued on page 51)

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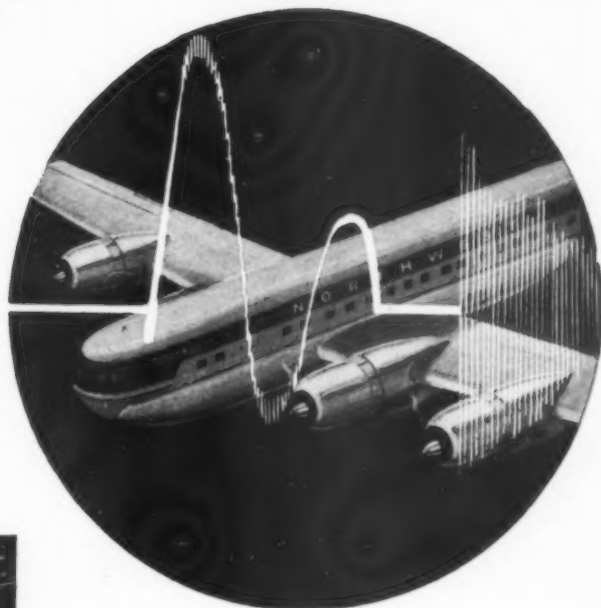
When & Where

- Feb. 19-20—Piper Distributors Meeting, Lock Haven, Penna.
- Mar. 3-6—Institute of Radio Engineers, Waldorf-Astoria Hotel and Grand Central Palace, New York.
- Mar. 3-7—American Society for Testing Materials, Spring Meeting, Symposium on testing metal powders and metal powder products, Statler Hotel, Cleveland, Ohio.
- Mar. 14—Institute of the Aeronautical Sciences, Seventh Annual Flight Propulsion Meeting, Cleveland, Ohio.
- Mar. 17-19—Second Mid-Western Conference on Fluid Mechanics, Ohio State University, Columbus, Ohio.
- Mar. 17-22—American Society of Tool Engineers, Chicago, Illinois (For information, write: Denham & Co., 812 Book Building, Detroit.)
- Mar. 20-22—Airport Operators Council, Annual Meeting, Hollywood-Roosevelt Hotel, Los Angeles, Calif.
- Mar. 30-Apr. 3—American Association of Airport Executives, Annual Convention, Fort Worth, Texas.
- Apr. 21-24—Society of Automotive Engineers, Aeronautic, Aircraft Engineering Display & Technical Air Review, Statler Hotel, New York.
- May 8-9—Fifth Annual Wisconsin Aeronautics Conference, Green Bay, Wisconsin.
- May 12-14—Institute of Radio Engineers, National Conference on Airborne Electronics, Dayton Biltmore Hotel, Dayton, Ohio.
- May 15-16—American Helicopter Society, 8th Annual Forum, Washington Hotel, Washington, D. C.
- May 17-18—National Pilots Air Meet and Races, Chattanooga, Tenn.
- May 22-24—American Society for Quality Control, Sixth Annual Convention, Syracuse, N. Y.
- June 1-6—Society of Automotive Engineers, Summer Meeting, Ambassador and Ritz-Carlton Hotels, Atlantic City, N. J.
- June 9-21—International Organization for Standardization, Triennial Meeting, Columbia University, New York.

International

- Feb. 22—ICAO, Third European-Mediterranean Meeting, Paris, France.
- May 6—IATA, Fifth Annual Technical Conference, Copenhagen, Denmark.
- May 19—IATA, Technical Committee, Thirteenth Meeting, Copenhagen, Denmark.

AMERICAN AVIATION



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Result: Northwest Stratocruisers spend more time in the air—less time on the ground.

► Sperry's Engine Analyzer is the first complete instrument provided for aircraft to isolate detailed engine difficulties. This instrument pays for itself in a matter of months. Aside from saving ground maintenance time, it also enables the flight engineer to maintain proper operating techniques at all times

. . . prevents unnecessary component replacements.

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IN THE NEWS TURBOPROPS

The Turbodyne, most powerful propeller-type aircraft powerplant in the country, delivers more than 8000 horsepower in addition to an undisclosed amount of thrust. Here, Jim LaPierre, manager of G-E's Aircraft Gas Turbine Divisions, and Virg Weaver, in charge of the Turbodyne project, take a look at the engine on the stand where it is undergoing rigorous tests.

Ten years ago, in July, 1941, G-E engineers started work on a new type aircraft powerplant—an axial-flow gas turbine driving a propeller. This was the TG-100, the first turboprop in the country and the forerunner of future powerful engines.

General Electric engineers today are experimenting with the Turbodyne, a Northrop development. Although larger than required for today's transport needs, the Turbodyne presents an ideal vehicle for testing new ideas and methods.

New and improved turboprop engines are in the books at General Electric. Light weight and high powered, these engines will someday be lifting new aircraft to new uses and new records.

When you're considering powerplants, call in the company that pioneered the aircraft gas turbine industry. Telephone your General Electric aviation specialist, or write General Electric Company, Schenectady 5, N. Y.



Convair XP-81, first turboprop-powered aircraft to fly in U.S., powered by TG-100, first American turboprop.



Design engineers Alan Howard and C. J. Walker, inspect an early TG-100 turboprop on test stand in Schenectady.

AIRCRAFT GAS TURBINES

GENERAL  ELECTRIC

"The Big Four"

12 into 6?

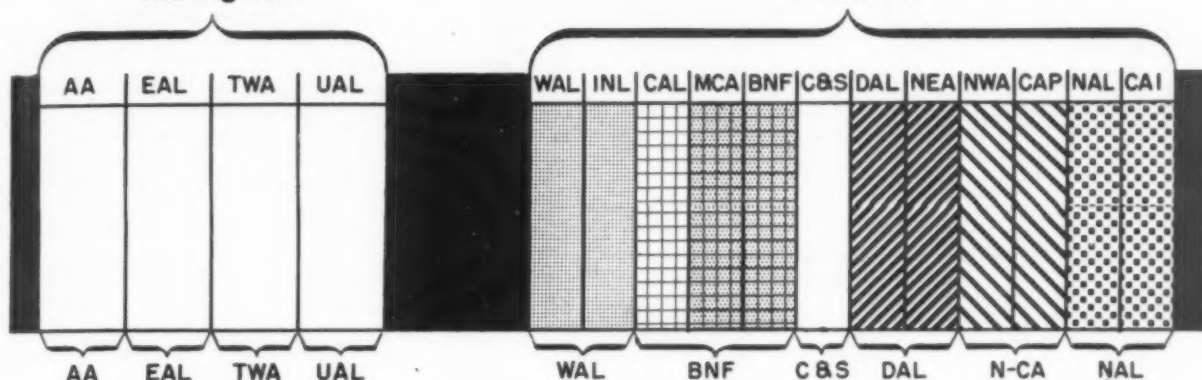


CHART SHOWS possible mergers. CAL-MCA case was indefinitely postponed following BNF-MCA agreement.

Fewer, Stronger Airlines New Merger Goal

10 of 16 domestic trunk lines now definitely committed in agreements filed with CAB.

By WILLIAM V. HENZEY

THE NATION'S trunk airline industry, gearing itself for tomorrow's economic challenge, is gripped in the greatest wave of mergers and acquisitions since the early 1930's. No longer in the talking stage, 10 of the 16 trunk carriers are definitely committed to merge in agreements on file for Civil Aeronautics Board approval.

Generally responsible are three things:

- Less Federal aid in the form of mail subsidy in the future.
- Sharp increases in operating costs with the trend still going upward.
- Uneconomic characteristics of present route structures.

Two Exceptions

Excluding the "Big Four," only two of the 12 so-called "regional" trunks are not parties to merger agreements—Chicago and Southern Air Lines and Continental Air Lines. If CAB investigations are considered, only C&S is a freest agent, for Continental is tied in with one of the investigations. But if the Western-Inland deal, in reality a paper transaction, is viewed in its proper light, Western must be considered on the outside of the merger fence.

Here are the combinations of carriers who are parties to firm merger agreements which have been submitted

for CAB approval:

- Braniff and Mid-Continent.
- Capital and Northwest.
- National and Colonial.
- Delta and Northeast.
- Western and Inland.

Also, the following combinations are being considered in CAB investigations:

- Continental and Mid-Continent.
- Delta, Northeast, Colonial, and Capital's southern routes 51 and 55.
- National, Colonial, and/or Northeast.

If CAB investigations are excluded and only the five pending merger agreements considered, the original 16 airlines with so-called "grandfather" rights could be reduced to 11 inside of a year. Conceivably, if CAB investigations are included and C&S makes a deal, the number could well be reduced to nine in a short space of time.

Behind all these moves is the compelling necessity for a self-sufficient air transport industry. American, Eastern, TWA, and United, all of substantial size with access to major traffic markets, are now operating free of subsidy according to CAB's administrative separation study.

While several of the 12 "regional" trunks are also considered to be operating without subsidy, their service or compensatory mail rate is higher than that of the "Big Four" because of un-

economic characteristics of their route structures.

Of the "regionals," Capital, Northwest, Delta, National, and Western are or soon will be on what CAB calls a subsidy-free rate of 53c per ton-mile, applicable to Class II carriers. The "Big Four," on the other hand, designated as Class I carriers, are paid a subsidy-free rate of 45c.

Expanding Markets

By expanding to other market areas through mergers, while at the same time contracting the overhead costs of two or more airlines into one, many of the regionals hope to create self-sustaining systems such as those of the "Big Four." And they figure now is the best time to do it.

Capital and Northwest would form a strong transcontinental line with the benefit of direct routes between Chicago-Washington and Chicago-New York. They have agreed to merge on a straight one-for-one stock transaction, with Capital's president, J. H. Carmichael, assuming the presidency of the new firm and NWA's president, Croil Hunter, becoming chairman of the board of directors. The firm would be known as Northwest-Capital Airlines, Inc.

Braniff and Mid-Continent would be predominantly a north-south carrier with access to such northern markets as Twin Cities and Chicago and the southern gateways of Brownsville, Houston, and New Orleans. In addition, the combined system will have the benefits of

Effect of Mergers on Rankings

Now	Unduplicated route miles	After Mergers	Unduplicated route miles*
1. United	7,079	1. Northwest Capital	7,217
2. American	6,512	2. United	7,079
3. Eastern	6,098	3. American	6,512
4. TWA	5,040	4. Eastern	6,098
5. Capital	4,209	5. Braniff (-MCA)	5,999
6. Northwest	3,704	6. TWA	5,040
7. Braniff	3,212	7. Western (-INL)	4,655
8. Western	3,042	8. Delta (-NEA)	4,263
9. Delta	2,999	9. National (-CAI)	3,347
10. Mid-Continent	2,860	10. Continental	2,557
11. Continental	2,557	11. C&S	2,553
12. C&S	2,553		
13. National	2,311		
14. Inland	1,613		
15. Northeast	1,264		
16. Colonial	1,036		

* Mileages estimated in cases of merged companies.

How Braniff-Mid-Continent and Northwest-Capital mergers would effect rankings of selected international airlines.

Now	After Mergers
1. PAA (Atlantic only) 21,889	1. Northwest-Capital 23,428
2. TWA (system) 17,486	2. PAA (Atlantic only) 21,889
3. Northwest (system) 16,211	3. TWA (system) 17,486
4. Braniff (system) 10,009	4. Braniff (-MCA) 12,766

Note: Unduplicated route miles for entire PAA system is over 55,000

Braniff's South American routes which, temporarily at least, include Miami as an additional gateway.

The Braniff-Mid-Continent deal, subject to CAB approval, would be consummated on the basis of 1½ shares of MCA stock for each share of Braniff. Braniff would be the surviving company.

National and Colonial would create an east-coast system extending from Montreal through New York, Washington, and Miami to Havana, with one leg extending from New York to Bermuda and another from Miami to New Orleans.

Their agreement, which has recently been consolidated with CAB's sprawling New England-Southern States Merger Investigation, was made on the basis of ¾ of a NAL share for each full share of Colonial. National would be the surviving company but would operate the Colonial routes as the "Colonial Division of National Airlines."

Delta-Northeast agreement, oldest of the lot, having been filed in October, 1950, is also the most complicated from point of consummation. A 400-mile route extension is necessary to join the two systems and CAB has indicated it will not consider substantial route extensions in merger cases.

But by including the agreement in the New England-Southern States case, CAB indicated that a third carrier or portions of a third carrier's routes may be the answer by which the deal could be approved. Delta would, as far as the Northeast deal goes, be the surviving company. With access to such traffic markets as Boston, New York, Miami, New Orleans, Dallas, Atlanta, and Chi-

cago, the system would be highly competitive with Eastern Air Lines.

Western-Inland transaction, which actually would have the effect of reducing the number of trunk carriers, has been described as "a matter of form rather than substance." WAL owns 99% of Inland's stock and has operated the company since 1944. But because of difficulties under laws of INL's state of incorporation, Wyoming, complete absorption has been impossible and technically, Inland has existed as a separate entity.

Now, however, complete merger is possible under a plan calling for dissolution of Inland and the distribution in liquidation of its assets, including the certificates for routes 28 and 35. The certificates would then be reissued by CAB to Western.

Recently the Board gave Western an exemption which permits execution of the plan subject only to final CAB approval of details.

Of the two pending CAB merger investigations, only one, the New England-Southern States Case, appears to be going forward. Case involving Mid-Continent and Continental, scheduled to start the same week the Braniff-MCA merger was announced, has been shelved indefinitely.

Hearings in the New England-Southern States Case are set for April 14 and now involve: (1) the voluntary National-Colonial deal; (2) the voluntary Delta-Northeast deal; (3) a CAB investigation of a possible combination of National, Colonial, and Northeast; and (4) a CAB investigation of a possible combination of Delta, Northeast, Colonial, and Capital's southern routes 51 and 55.

High Costs May Push Fares Up, Hogan Says

American Airlines faces 1952 cost increases of \$19 million over last year in salaries, materials and fuel and oil, and it is to be hoped that the CAB will not go "overboard" on continued pushing of low air fares but will make future fare decisions "with one eye on productivity, inflation and load factors," according to William J. Hogan, AA's vice president-treasurer.

Traffic will increase this year, but not at the 1951 rate, and if operating costs continue to rise, air transportation rates "must keep pace with such increases to permit continuation of profitable operation and to secure capital necessary for the continued growth of the business," he said in a significant speech before the Association of Security Analysts in Los Angeles.

Hogan also stated:

CAB seems to be about a year behind on its evaluation of economic factors. "The Board economist looks at large profits of a period which is gone, but he is not aware of it. He is now thinking of fare cuts."

The trend toward higher unit costs started last July after three years of steadily declining expenses.

Rate of increases in productivity per employee will be less in coming years because the impact of new equipment has now been completed. However, there will be some increases.

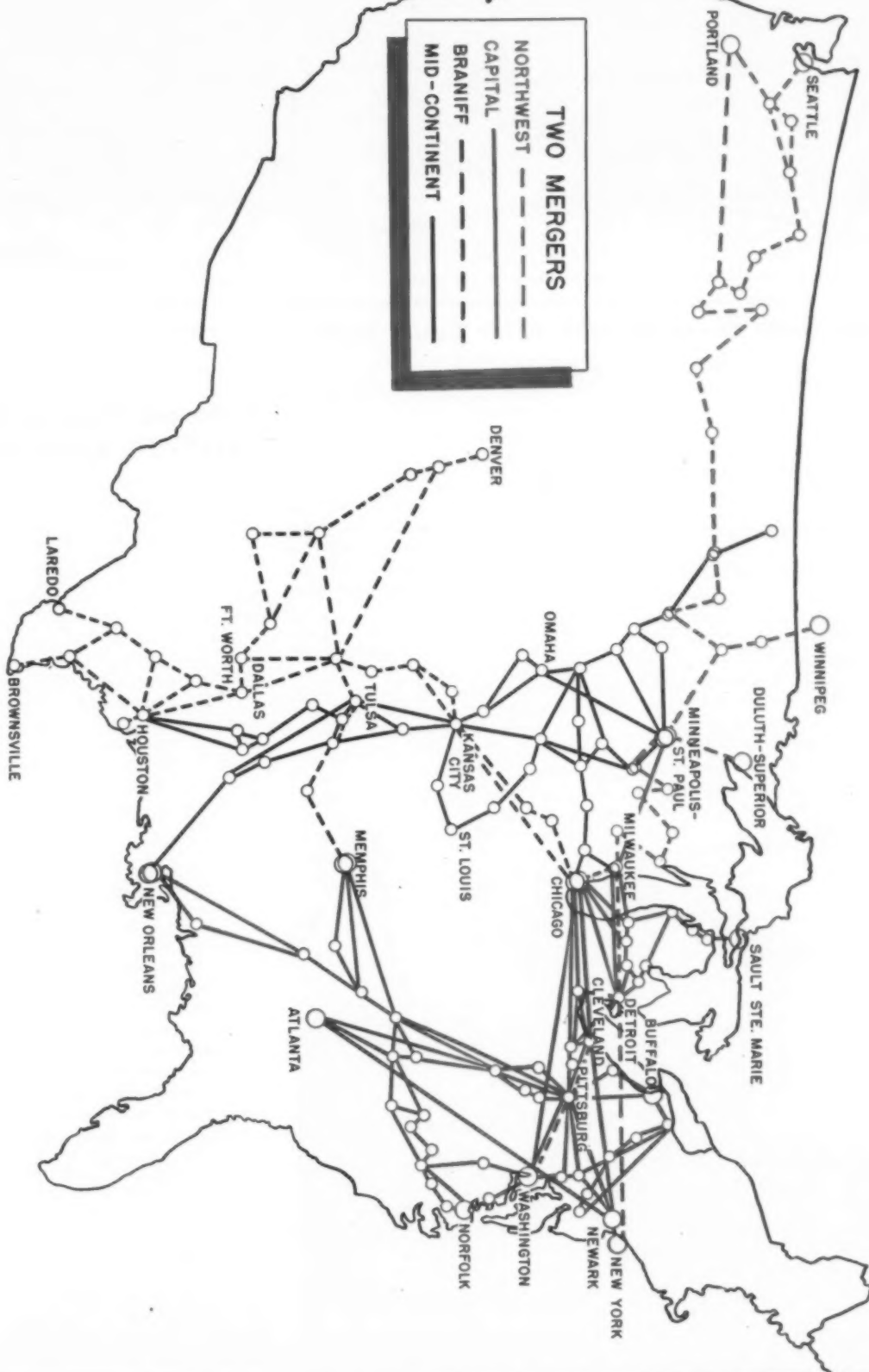
Rising expenses can't be entirely offset by better expense control and by increasing revenues through aggressive promotion, and rate increases may therefore be needed.

Some current CAB thinking, he added, is based on the assumption of a continuance of present unusually high load factors which a slight traffic recession would reduce, whereas "it is reasonable to expect a business recession or a deflationary period in the not too distant future."

"With expenses climbing, rates declining and a business recession in the offing, it is not difficult to imagine the airlines in difficulty unless the CAB and members of the industry take counsel from past experience."

Breaking down AA's increases, he said salaries will be \$10 million over 1951, materials \$5 million, and fuel and oil, including taxes, \$4 million.

In addition to over \$60 million of conventional type equipment now on order, perhaps an additional \$75 million in equipment will be needed by 1962, and ground equipment may raise the grand total to \$150 million, he said, adding that a strong financial position and "intelligent" government regulation will be necessary in order that AA can get part of the money from the security markets.





TWO SE 210 "Armagnacs" are shown above on the runway of the SNCASE plant near Toulouse, France.

CAB Cuts C-46 Gross Weight After Court Fight

The case of the Civil Aeronautics Board versus the Curtiss C-46 moved at a fast pace early this month with the following developments:

- A special regulation issued by CAB, as an emergency measure, reducing the gross operating weight of the C-46 aircraft used in passenger-carrying operations from 48,000 to 45,000 pounds starting Feb. 3.

- A restraining order preventing CAB from enforcing the ruling without public hearings on the matter issued by Federal District Court Judge Matthew W. McGuire at the request of The Council for C-46 Engineering, which claimed "irreparable damage" would result.

- A second order, issued by Judge McGuire, within a few hours after the original restraining order, dismissing the earlier injunction against CAB enforcement.

- Application of the weight reduction starting Feb. 3.

- A court order on Feb. 3, issued by Federal District Court Judge James W. Morris after hearing both sides of the case, denying the motion of the Council for C-46 Engineering for an injunction against the ruling.

The CAB ruling came as a surprise within a short time after CAB Examiner S. Thomas Simon had presented the Board with his findings of fact in the hearing held regarding the pending regulation. The Examiner denied many of the basic facts presented by CAA and CAB in their case against the C-46.

In issuing its emergency ruling CAB did not depend on the Examiner's findings, which it said would influence the final regulation growing out of the C-46 hearings. Rather, the Board noted that the general operating practices and procedures of the non-scheduled operators using the C-46 in passenger-carrying operations made the temporary emergency ruling necessary. The items

complained of:

- Failure to maintain pilot training and proficiency at a desirably high level.

- Failure to ensure aircraft and engine maintenance at a desirably high level.

- Failure on the part of the companies and their personnel to follow certain operating procedures established in accordance with the CAR, including those pertaining to maximum operating weights.

The CAB charged that its action was prompted by three accidents within 50 days claiming the lives of 82 people and was based on the record of 39 C-46 accidents since 1947. Seven of these accidents involved loss of power on one engine, 24 the factor of pilot error, and nine the failure on the part of other personnel including maintenance personnel. Five of the seven accidents involving loss of one engine occurred on take-off, and all five such accidents, at least partially, resulted from inadequate maintenance.

Said the Board: Safety is accomplished by constant attention to improving maintenance and operating practices, development of greater pilot skill, and development of appropriate standards of performance of aircraft, not by a single factor, but by a combination of circumstances embracing any or all of these factors.

DC-4 Inspection Ordered

CAA has ordered all operators of Douglas DC-4 equipment, as well as operators of all large aircraft, to make an immediate inspection of the bonding tape used on the trailing edge of the elevators. A torn tape on the trailing edge of a Capital Airlines DC-4 elevator caused the plane to plunge some 2,000 feet recently before the pilot could regain control. Air flow across the raised tape forced the elevator down-

ward, causing the plane to dive. Several passengers were injured in the plunge, none of them seriously.

Railroads Oppose MWA Certificate Renewal

In a move for which no precedent has been found, six Class I midwestern railroads have asked CAB to reopen a case in which hearings have long been completed and an examiner's report issued. Case involves renewal of Mid-West Airlines' local-service certificate. Joint document filed with CAB was signed by the Burlington, North Western, Milwaukee, Rock Island, Omaha and Union Pacific railroads.

They complained to CAB that no notice of the renewal case was given them previously and hit at Examiner James S. Keith's recommendation that MWA's certificate be renewed for three years and the present routes extended to Denver.

CAB officials could not recall when, if ever, railroads participated in a CAB case. Some sources indicated that the lateness of the filing in the Mid-West case might be an indication that a decision has been reached by rail companies to participate in certain CAB cases, but this could not be confirmed.

Railroads attacked operation of MWA by the Purdue Research Foundation which they said is "affiliated with Purdue University, a tax-supported educational institution." They said that if CAB should act favorably on the renewal issue, "petitioners, none of which enjoys the advantages of educational or research endowments to recoup operating losses, will be adversely affected, and that the solvency of some of them may be threatened."

MWA has never operated aircraft larger than single-engined planes and is one of the smallest local lines in the country. But it has been recently acquired by the Purdue Foundation which, if CAB renews the certificate, intends to utilize Douglas DC-3's.

Recommendations Follow AA Accident

Several major investigations into the crash of an American Airlines Convair 240 at Elizabeth, N. J., are underway. In addition to the regular Civil Aeronautics Board investigation and hearing, the latter scheduled for Elizabeth on Feb. 13, several other groups have programs:

- **Five members of the House Interstate and Foreign Commerce Committee** held hearings in Washington the week of Feb. 3 and planned to reconvene in Elizabeth on Feb. 13 or 15.

- **The Senate Interstate and Foreign Commerce Committee** sent special investigators to the scene of the accident to determine if the Senate should take further action.

- **A series of resolutions** were introduced in Congress all aimed at determining the exact causes of the two recent crashes at Elizabeth and instigating steps to prevent recurrence.

The airline industry was not unaware of the serious nature of the public reaction. On Jan. 28 the Air Transport Association staged a news conference in New York, presided over by Eastern Air Lines' Captain Eddie Rickenbacker, at which it discussed seven major steps being taken to improve the safety of residents in the heavily populated Elizabeth area:

- **Completion of a taxi strip** which will divert about 40% of traffic now routed over the Newark-Elizabeth area, scheduled for use about Feb. 5.

- **Expedited completion** of a study to prove the safety of, and application to CAA for authority to modify, the wind-component restrictions so that another 20-25% of present traffic in this area can be diverted to other approaches.

- **Completion of a new main runway** which, with other runways, will divert all but 4% of traffic from this area. Runway is scheduled for completion late in July.

- **Recommendation to CAA and CAB** that a code for pre-take-off inspection and operational regulations be used at all major air terminals.

- **Application for the installation** of adequate baffling mechanisms to muffle the noise of engines during warm-ups.

- **Requirement that all aircraft** follow the approach-departure techniques used by the airlines to minimize operation of aircraft over congested city areas.

- **Requirement that all aircraft** operating in terminal areas be equipped with two-way radio and navigational facilities.

Meanwhile the Senate accepted a report of its investigators duplicating many of the suggestions made by ATA plus:

- **Designate Runway 10** as first priority runway when weather permits.

- **Adopt radar direction** as required departure procedure at Newark in instrument weather as soon as possible.

- **Encourage practice of making low altitude turns** after take-offs to avoid congested areas whenever the safety of the flight will not be endangered.

- **Raise the instrument weather minimums** at Newark Airport to a ceiling of 500 feet and 1 mile visibility until such time as the new instrument runway is operational.

UAL Employees Will Top 13,000 This Year

United Air Lines expects to hire over one thousand employees this year to raise its work staff from the current 11,500 to more than 13,000. Most of the new employees will be in the mechanics, co-pilot, and stewardess categories, although other classifications like radio operators, station and passenger agents, counter and telephone sales agents, and ramp servicemen will also be expanded.

If UAL's goals are to be met, most of the hiring will have to take place during the first half of the year. The present timetable calls for 300 new shop mechanics at the San Francisco maintenance base by March 1 and 170 line

mechanics at various major terminals by the same date. In addition, 205 stewardesses are to start training at Cheyenne by April 9 and 234 co-pilots must begin training at Denver by June 25.

Pan Am Begins New Management Training

An intensive, two and one half year training program designed to produce management men familiar with all phases of Pan American World Airways' operations in Latin America has been instituted by that airline in Miami.

Eight employees of Pan Am's Latin American Division have been chosen as the first group of trainees. While on the program they will spend from two to 25 weeks in each of the various departments of the division. They will also spend four weeks at a Latin-American station studying traffic and operational problems, and will learn at least one foreign language used in the area.

Goal of the program, which is the most elaborate of its sort yet undertaken by PAA, is a supply of management men with broadly varied experience.

11 Convairs Ordered

Consolidated Vultee Aircraft Corp's backlog of orders for the Convair 340 twin-engine transport jumped to 151 when two Pan American World Airways affiliates in Mexico announced they had placed orders for 11. Compania Mexicana de Aviacion will receive eight of the 44-passenger ships and Aeronautes de Mexico has ordered three.



BRISTOL SYCAMORE 10, shown above, is an ambulance version of the Type 171 single-rotor helicopter. To accommodate two stretchers, two "Perspex" blisters have been incorporated in this model. These can be detached for normal transport operations.

What is Needed for All-Weather Flying

Experts agree improved equipment and procedures are necessary, even for present minimums.

By WILLIAM D. PERREAULT

TWO FATAL accidents in quick succession at Elizabeth, N. J., have done more to focus the nation's efforts on the problems of air transport operations in low-weather conditions than any planned program has ever accomplished.

The safety records of the airlines, operation of ILS and GCA, and general operating procedures used in instrument flight occupied the front pages of newspapers, were brought into the living room via television and radio, and were discussed on every street corner. Congress is considering some nine proposals directly related to these crashes.

What has happened to all-weather flying? The airlines are operating with weather minimums, with one single exception, which require 200-foot ceilings and $\frac{1}{2}$ -mile, or greater, visibility. At Newark Airport, the field involved in the Elizabeth crashes, Congress is considering requiring the use of 500-foot ceilings and one-mile visibility. If this effort to raise the minimums is successful, it will set off a series of similar requests in other cities.

Minimums 'Unrealistic'

The doubt doesn't rest simply in the minds of lay observers. In his excellent paper on airline safety, presented before The Institute of the Aeronautical Sciences, Pan American Airways' W. W. Moss said, "We feel that this demonstrates also that minimums of 200 and $\frac{1}{2}$ are, at this time, not realistic when the human equation is taken into account with the instrumentation and speeds presently provided."

All-weather flying is not possible today "nor in the reasonable, foreseeable future," according to a representative group of the nation's top pilots and electronics engineers. In a symposium on all-weather flying, held during the annual IAS meeting in New York, these experts presented



Robert Roe

some statistics and operational experiences which emphasized the shortcomings of present day equipment and procedures in permitting all-weather flying, or even sound operations at today's minimums.

More than 50 domestic airports are approved for operations at 200-foot ceilings and $\frac{1}{2}$ -mile visibility. Yet more than 30% of all attempted landings with minimums of 400-foot ceilings and $\frac{1}{2}$ -mile visibility are missed approaches, according to Robert Roe, test pilot with Sperry Gyroscope Company. Reporting on CAA records covering more than 13,000 operations into Region I airports with minimums below 900-foot ceiling, Roe noted that 10% of all straight-in



John Gill

approaches in DC-4's during the 1950-51 survey period had resulted in missed approaches when the ceiling was 500 feet and the visibility one mile. At 500 feet and $\frac{1}{2}$ -mile this was raised to 25% missed approaches.

A sharp rise in missed approaches accompanied a reduction in visibility minimums from $\frac{3}{4}$ to $\frac{1}{2}$ mile. Roe's conclusions were called invalid for the industry by Eastern Air Line's chief pilot John Gill, another all-weather veteran, because they were compiled from results in too localized an area.

Fewer missed approaches, not lower minimums, should be the industry's goal for the present time, Roe cautioned. He felt that the industry should attempt to reduce missed approaches to 5%, a more than 25% reduction below the present 400 and $\frac{1}{2}$ minimums. If Roe had comparative figures for 200-foot ceilings and $\frac{1}{2}$ -mile visibility he did not discuss them.

Earlier in the day the U. S. Air Forces' Captain James Anast contributed the All Weather Flying Section's experience to the discussion. Operation to zero-zero conditions, he said, is not possible by refinement of present-day equipment. New techniques to provide greater track accuracy and methods of landing control are required.

Meanwhile, Sperry's 2600 megacycle ILS, a system not in general use and still classified by the military services, has proved the most precise aid available, AWFS tests have shown. It is capable, used with automatic approach equipment, of making landings at 50-foot ceiling and $\frac{1}{4}$ -mile visibility. This contrasts with 95% expected completion for GCA or present ILS used with automatic approach couplers at 100 and

$\frac{3}{4}$, and the same degree of success with either ILS or GCA used manually at 200 and $\frac{3}{4}$.

Automatic approach equipment, units which will take signals from the ILS and convert them into control system movements through the automatic pilot, is mandatory if minimums are to go any lower than now used. Some doubt exists that present approach couplers and related equipment are reliable enough to depend upon for lower minimums and particularly for automatic landings. Said Roe: "The approach coupler can lower [pilots] into a trap from which it is very difficult to recover."

Maintain Proficiency

EAL's John Gill noted that, while EAL was the first airline to use auto pilots, it no longer uses them. As chief pilot for Eastern, Gill feels it is critical that the pilot do a reasonable portion of the flying manually to maintain proficiency. Before Eastern will accept automatic approach equipment, the pilots will have to be assured that they can take over at any time prior to touchdown without difficulty.

First step in this direction, Gill said, might be to provide complete and automatic localizer tracking with the pilot handling the glide-path. In this way the auto pilot will be handling the most troublesome task but the pilot will be very much on the job and in control of the aircraft.

Some of the shortcomings of present electronic equipment were elaborated on by United Air Lines' E. A. Post. Post is critical of the flag alarm system used on the ILS/VOR indicator to notify the pilot of system troubles.



E. A. Post

Flag alarms, Post warns, "can be trusted too far." While they tell the pilot if there is no signal from the ground station, they do not warn of on-course errors or failures in the airborne equipment. Filter failures causing one-degree errors in the ILS or up to 30 degrees in the omnirange are not always detectable. Post holds out hope that someone will design an adaptor for the VOR to tell of airborne component failures. Increased sensitivity in the flag alarm system would also be of value.

The problems are well documented. The answers are elusive. American Airlines' E. A. Cutrell, one of the country's

ablest pilots and all-weather flying champions, had some suggestions: Freight schedules and all non-passenger flights of the scheduled airlines should be operated in all-weather flights to improve the aids, train crews, and generate confidence in this type of flying. Meanwhile electronic equipment for approaches from at least two opposite directions should be installed, FIDO equipment for fog dispersal should be further developed, and a group should be established within the Air Coordinating Committee to coordinate all activities in the field of all-weather flying.

Virtually every speaker stressed the need for standardization and increased installations of visual aids—approach and runway lights, runway markings,

and so forth. Gill said that adequate visual aids exist for all-weather flying but too few funds are available for installation. He thought that the requirements of safer operations included "about 95% electronics and 5% paint."

No small factor in all-weather flying, as in all flying, is the matter of the pilot's work space, the cockpit. Even today, according to Commander Lynn S. Beals, Jr., of the Navy's Medical Corps, "man is not capable of matching the performance of the airplane he operates." This is in part due

to poor cockpit design. "Control space for the human operator is poorly conceived, badly organized and not well suited to the technical needs of the human operator."

Beals told the IAS that the pilot is given more information than is necessary, raw information requiring complex pilot computation, and information displays that violate or fail to match normal patterns of comprehension. Quantitative information provided unprofitably and gratuitously complicates the pilot's task producing unnecessary fatigue and reduced efficiency.

Said Gill, speaking of landing aids: "Signals must be instinctive, there is no time for conscious mental computation."



E. A. Cutrell

How a Veteran Pilot Looks at Safety

'Pilot error' can be reduced by improvements in equipment, Capt. Moss tells IAS meeting.

DURING a 30-year flying career with the scheduled airlines, chances are three in four that a pilot will be involved in an accident and one in nine that he will be in a fatal accident, according to William W. Moss, Pan American World Airways pilot and spokesman for the Air Line Pilots Association.

Speaking before The Institute of the Aeronautical Sciences in New York, Moss provided a clear-cut picture of the pilot's stake in operating safety and some related factors.

The airline pilot has the greatest

single stake in the matter of airline operating safety. In addition to the hazards of actual bodily harm, the pilot's "employment security, opportunities for promotion, pay, choice of domicile and his working conditions in general are all affected by the impact of the level of safety on the public's demand for air transportation."

Despite this, approximately 50% of all airline accidents are charged to "pilot error." There are other underlying factors, according to Moss, chief of which are basic equipment problems. Twenty-five percent of all airline fatali-

ties, 20% of all accidents, and 40% of all accidents chargeable to pilot error could be eliminated by the adoption of three corrective steps.

- **Misuse of the landing gear** accounted for 47 accidents during the 13-year period under study, yet interconnection of the landing gear and flap controls and of the wing flaps and throttles would have prevented these accidents. These provisions as proposed by Convair vice president Ben Howard could eliminate 75% of all accidents and 12.5% of those charged to "pilot error."

- **Mandatory use of reversible pitch** propellers on all transports would also cut sharply into pilot-error accidents, preventing 10% of the 62 accidents at-

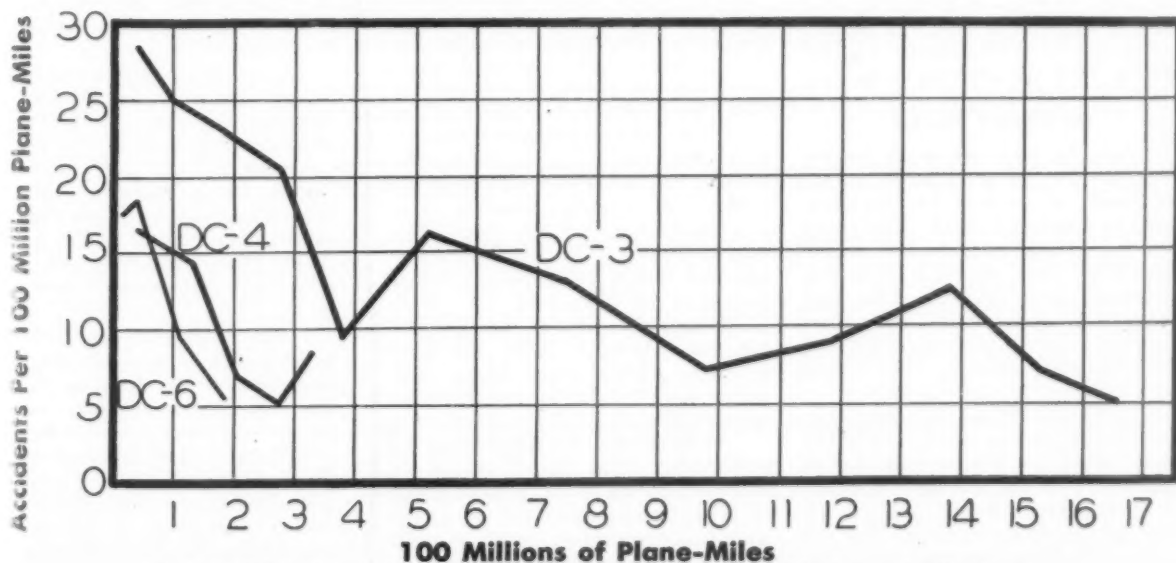
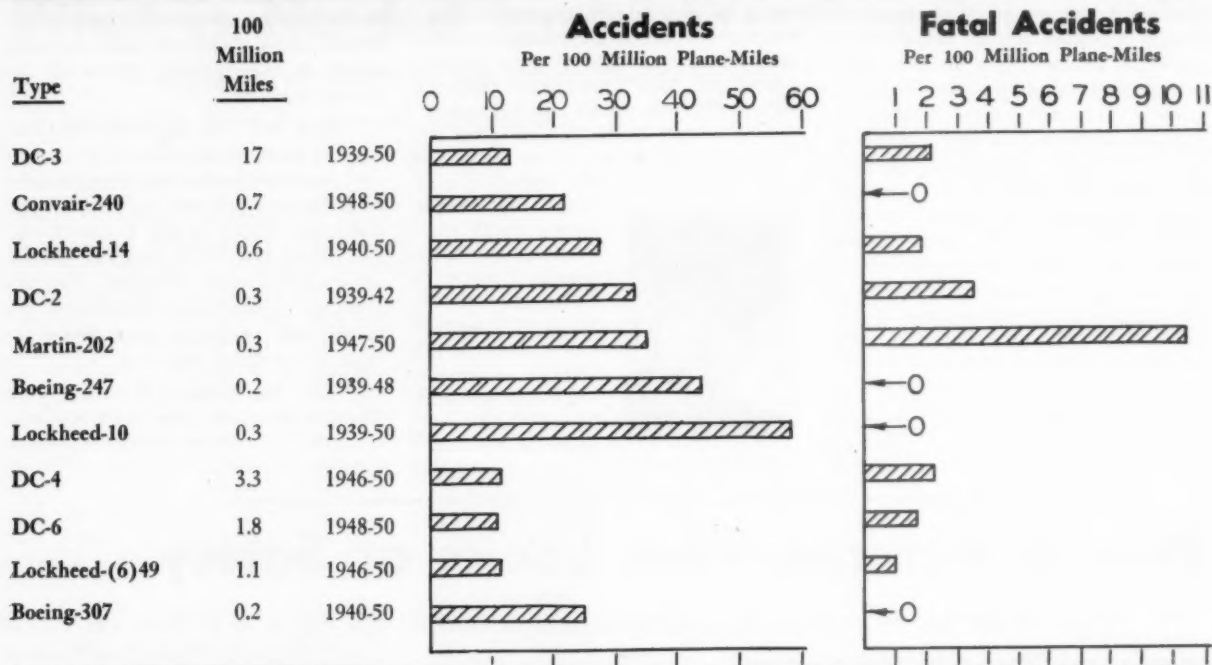


CHART SHOWS how accident rates of three planes have been affected by increased miles flown.



tributable to stopping distances following an aborted takeoff or landing and 21% of the "pilot error" accidents. With one exception, Moss states, this type accident has been non-existent on aircraft equipped with reversible pitch propellers.

• A practical terrain-warning device would eliminate 20% of all fatal accidents, 25% of the fatalities, and would reduce "pilot error" accidents by 6.5%. Terrain-warning indicators were once required by CAB but later removed when they proved unreliable. "It appeared to the pilots that more effort went into proving that the device was unreliable than in improving it to a practical and useful point," Moss said, noting that TWA's experience with the Hughes TWI has been very satisfactory.

Accident Rates

From the pilot's standpoint the best indication of operating safety is the relationship of accidents and fatal accidents to plane-miles flown. Moss points out that accident rates per 100 million plane-miles have shown a promising downward trend. Accidents have dropped from a rate of 48 per 100 million plane-miles to 10, between 1938 and 1950, and fatal accidents went from 8 to 1.5 during the same period.

Many new flying aids have been provided for the pilot during this period, Moss noted, but it is an indication of improved pilot skill that the multiplicity of "instruments, controls and gadgets" have not caused confusion and mistakes resulting in higher accident rates. The instruments, controls and gadgets pic-

ture changed in this manner:

Douglas DC-3	289
Douglas DC-4	400
Convair 240	522
Douglas DC-7	600-700
Boeing 377	1,000

In a chart of accident rates as a function of cumulative miles flown, Moss provided impressive support for ALPA's claims for longer "debugging" periods during which the plane would not be flown in regular passenger service. (See page 21.)

Some of the other comments and recommendations of Moss:

• While the pilots feel the present CAB Safety Bureau is doing a good job they still believe that the Independent Air Safety Board, composed of experts with the power of enforcement, would provide improved safety.

• The marked correlation between the accident rate and accumulated mileage, and lack of correlation between the accident rate and the period of years over which the plane has been flying, leads to the conclusion that original design and development, not pilot skill, determines the safety level.

• Since the pilot is the final determinant of flight safety, his help should be actively sought in the early design stages in order to make his tasks more simple.

• The human limitation factor in airline safety offers the best chance for improvement and should be approached by designing operations and equipment more nearly to conform to human ability, not by more severe selection or training of personnel.

About Capt. Moss . . .

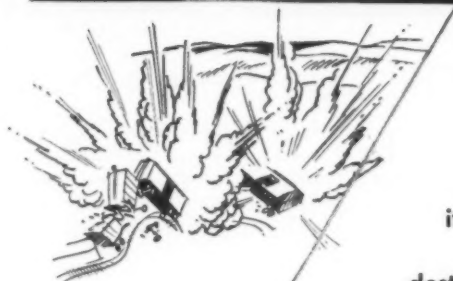
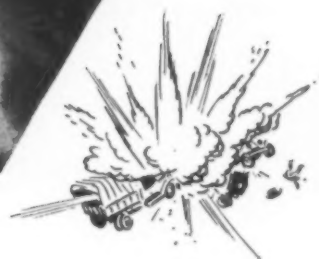
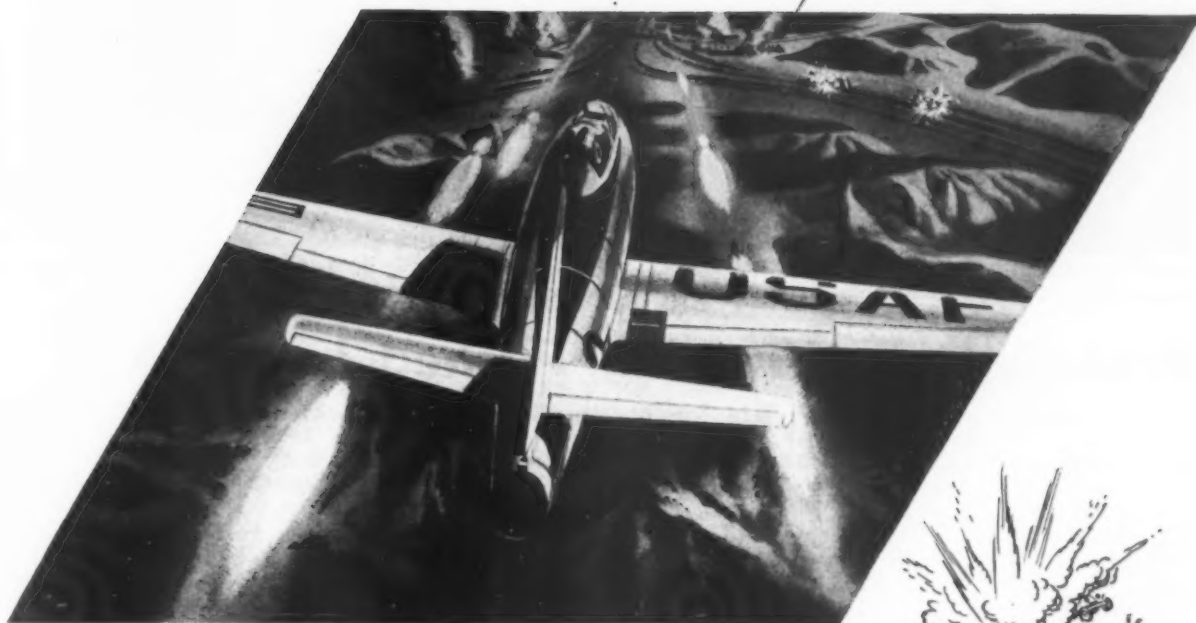
William Washburn Moss, Pan American World Airways captain, is one of that elite group of Air Line Pilot Association members who manage to round out their full-time duties as pilots with time-consuming committee work wherever informed pilot opinion is in demand.

At 37 years of age, Moss has logged some 12,000 flight hours, made more than 230 trans-Atlantic flights. He joined Pan American in 1939 after four years as a Navy dive bomber pilot. Moss was educated at Brown University in Providence, R. I.

As a member of the European Survey Group of the Prototype Aircraft Advisory Committee, Moss toured Europe in mid-1951 surveying jet transport progress abroad. He is chairman of the Engineering and Air Safety Committee, Council 36 of ALPA, and ALPA liaison representative to the CAA-CAB Performance Committee.

Moss captained the PBM which picked up 48 survivors of a torpedoed in the Pacific in 1943, the first PAA schedule into Barcelona and the inaugural flight from New York to Johannesburg. He was Atlantic Division check pilot 1946-49. In 1951, flying a Boeing Stratocruiser, he set a non-stop London-New York speed record of 13 hours 5 minutes.

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AVRO JETLINER may be available for CAA's proposed jet aircraft testing program. If the Jetliner is included in the program, Canadian personnel may participate directly in the testing. Canadian tests have been terminated, and the Jetliner is not in production.

Prototype Jet Testing Pushed by CAA

May 1 set as target date for program involving Avro Jetliner, North American B-45, Douglas F3D.

REQUEST for a supplemental appropriation of \$1,534,000 to finance a 15-month CAA program of testing three proposed jet aircraft—the Avro Jetliner, North American B-45, and Douglas F3D—has been approved by the CAA's Prototype Aircraft Advisory Committee and is now under consideration by the Bureau of the Budget.

The request for the appropriation to supplement fiscal 1952 funds follows earlier failures to obtain money which would put into motion a more ambitious CAA program of prototype jet testing. Although Congress approved a request for \$12.5 million to finance a more extensive investigation into jet prototypes in fiscal 1951, a CAA request for a \$2 million appropriation to get the program rolling in fiscal 1952 was turned down by the Bureau of the Budget.

Later the Bureau approved a test program in the amount of \$600,000 on which two Air Force B-45 bombers were to be used. This request was refused by the House Subcommittee and the Joint Senate House Conference Committee.

Present proposed testing program is more modest in its scope than the projected initial one. But the need for CAA investigation into the field of jet operations becomes apparent when it is considered that turbo-jet and turbo-prop aircraft are becoming more and more prominent in the national aviation picture, and neither CAA nor CAB has had an adequate opportunity to run long-range, controlled tests on these types.

According to CAA Administrator Charles F. Horne, chairman of the

Prototype Aircraft Advisory Committee, speaking at the fourth meeting of the committee held Jan. 10, there are a great many questions regarding turbine powered aircraft to which CAA and CAB must get answers in the interest of adequate safety.

Program Outlined

Richard K. Waldo, Horne's special assistant, outlining justification for the program, pointed out that speeds and altitudes of coming turbine aircraft will roughly double those of present transports. Information needed by CAA and CAB, both for safety and economy, includes design speed, fuel reserves, traffic control, jet blast effect at airports, and other data. He outlined

the CAA plan for obtaining information on these and other problems. (See box.)

Proposed test program is expected to assume the following general lines:

- **One Avro Jetliner**, equipped with Rolls Royce centrifugal-flow Derwent-5 engines at 3,600 pounds static thrust per engine, will be instrumented for airway tests, airway electronic tests, and design information. Forty-five hours of airworthiness tests at \$750 per hour and 365 hours of operational tests at \$500 per hour are contemplated.

- **Two Douglas F3D** Navy night fighters, powered by two Westinghouse axial J34 engines and equipped with side-by-side seating and dive brakes will be used. One of the aircraft will be instrumented for airworthiness and airways electronics, while both will be instrumented for design information. Eighty hours of airworthiness tests at \$600 per hour and 325 hours of opera-

Partial and Provisional List of Problems

to be considered by CAA in its proposed jet prototype testing program

1. Turbine-powered transport certification requirements.
2. Turbine engine reliability, including thrust deterioration with engine time.
3. Temperature and humidity effects.
4. Turbine engine fire prevention and control.
5. Practical take-off assistance methods.
6. Noise control.
7. Fuel problems — availability, cost, storage, handling, etc.
8. Auxiliary power devices.
9. Icing protection methods.
10. High altitude meteorological problems.
11. Clear air gusts.
12. Probability and effects of lightning strikes.
13. Hall damage prevention.
14. Radar for weather avoidance and navigation.
15. Effects of bird strikes.
16. Radio and navigation aids.
17. Precipitation static problems.
18. Anti-collision methods or devices.
19. Cabin ventilation problems.
20. High altitude pressurization hazards.
21. Emergency procedures for explosive decompression.
22. Oxygen requirements.
23. Emergency descent devices.
24. Gust alleviation.
25. Relation between design speed and "never exceed" limit.
26. Devices for landing—brake and tire problems, etc.
27. Ground handling problems.
28. Emergency exits.

tional tests at \$500 per hour are planned.

• **Two North American B-45** four-jet light bombers, powered by G-E axial-flow J47 engines, are to be obtained from the Air Force. These aircraft have tandem seating but no dive brakes. One will be instrumented for airworthiness tests and one for airways electronics. One hundred hours of airworthiness tests and 100 hours of operation tests at \$1,000 an hour are contemplated.

Tests are planned to begin May 1, 1952, and continue until April 1, 1953.

Commenting on the aircraft selected for the testing, Horne indicated that a commitment has been obtained from the Air Force for the B-45. If the proposed Avro Jetliner is used in the tests, Canadian officials will pass on to CAA all currently compiled information on the aircraft, both favorable and adverse. In return, they wish their personnel to take a direct part in the test program. Questioned by Harold L. Montee, representing the international large irregular carriers, on whether or not an attempt has been made to obtain a De Havilland Comet for the program, Horne declared that while a Comet would be technically advantageous for this purpose, availability is extremely doubtful. He pointed out that Royal

Canadian Air Force Comets will probably not be delivered until some time in 1953.

Meeting of the committee elicited some interesting comments from the members. Among them are the following:

• **Amos Heacock**, representing domestic large irregular carriers, noted the fact that the program does not include cargo developments, cost studies, or the testing of helicopters. These were limitations, in his view. Questioning the amount of technical information obtainable on turbulence, icing, and airway traffic control by the testing of a B-45, Heacock felt that a broader program was necessary.

CAA Commended

• **Joseph Adams**, representing CAB, was of the opinion that the program could be opposed on the ground that there was no emphasis upon local-service aircraft and that there was nothing being done toward a replacement for the Douglas DC-3. But it was his view that it is commendable of CAA to take the lead in obtaining information in an important area.

• **J. W. Crowley, Jr.**, representing the National Advisory Committee for

Aeronautics, said that NACA would support the program, but he stressed the importance of getting it under way as soon as possible.

• **Admiral DeWitt C. Ramsey**, representing Aircraft Industries Association, stated that he had put several questions to the ad hoc Prototype Committee of AIA in anticipation of the meeting. This committee includes Arthur Raymond of Douglas, Fred Collins of Boeing, Hall Hibbard of Lockheed, and R. C. Sebald of Convair. Ramsey said that the delay in getting the B-45 program under way had considerably diminished the value of the program, in the opinion of the manufacturers. He pointed out that the manufacturers wish to work directly with the transport operators with a minimum of government intervention.

• **Rear Admiral L. M. Grant**, representing the Navy, stated that it appeared that a CAA request for F3D's would receive favorable consideration and that two airplanes would probably be made available at least in fiscal 1953.

When the program was put to a vote all representatives indicated their support with the exception of Heacock, who abstained from voting. No representatives were opposed to the program.

How the R-3350 Looks After 80,000 Hours

Fluid-coupling and turbine-growth problems have been licked during shake-down operations.

THE WRIGHT R-3350 Turbo Compound engine has now accumulated more than 80,000 flight hours in military service and service tests are under way in the U. S. Navy using 1,000-hour overhaul periods for the new engine. This is the 3250-horsepower engine scheduled to power the Lockheed L-1049C Super Constellations, scheduled for airline service in mid-1953, and the Douglas DC-7, scheduled for initial airline service in January, 1954.

71 on Order

Forty-six Turbo Compound-powered Connies are on order and 25 DC-7's. The engine remains the largest single unknown factor in the future of these two aircraft. This highlights the importance of the Wright Turbo Compound to the operators and the industry. To trace down operational experience to date, AMERICAN AVIATION worked with Wright Aeronautical's service engineers lining up available data.

The Turbo Compound engine is not yet certificated by CAA for commercial use. These tests are now under-

way and no trouble is anticipated. Actually the military version of the compound engine is operated at powers up to 3500 horsepower. The conservative 3250 horsepower rating sought for the civil installations should present no problem.

The R-3350 972TC18DA1, formal designation of the civil engine, has not been approved for export either. This is a critical factor since several foreign lines, including KLM, Trans Canada, and Air France have L-1049C's on order. While an export license is re-

\$31 Million in Orders

Production has started on more than \$31 million worth of Turbo-Compound engines for airline Lockheed Super Constellations and Douglas DC-7's, according to Wright Aeronautical Division of Curtiss-Wright Corp. Orders, most of which were received recently, involve engines for both domestic and foreign airlines. Additional commercial orders totaling several million dollars are expected.

quired for the Turbo Compound, which is still a classified military engine, this should be forthcoming well before scheduled delivery dates of the foreign planes, military and company officials feel. Much of the basic engine information has been released and even a full-scale cut-away model of the engine has been cleared for public showings.

Despite operational experience in excess of 80,000 hours, no overhaul experience has been accumulated. Strange as it may seem, it will be mid-1952 before engines start through the Navy's overhaul depots in sufficient quantity to provide any indication of expected service life. The Navy is setting up overhaul facilities at Alameda and Norfolk Naval Air Stations. Until now facilities have not been available and production has been sufficient to handle replacement needs. Removed engines have been placed in storage until service demands and overhaul facilities were increased.

Standard engine overhaul period for the U. S. Navy, which uses the Turbo Compound in the Lockheed P2V and Martin P5M, is 700 hours. Early service difficulties and related modification programs kept operating time at low levels in the early engines. As part of one of these modification programs, a

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Facts About the R-3350

The Wright R-3350 Turbo Compound engine produces up to 3500 horsepower, weighs only 3480 pounds. It is the first air-cooled engine to develop in excess of one horsepower per cubic inch displacement. At 3500 horsepower the R-3350 engine is today producing 1500 more horsepower than the original Wright 18, first tested in 1936. Its diameter is 56.59 inches and its length 91.80 inches. Specific fuel consumption ranges from .385 to .395 at cruising power.

Rated horsepower of the R-3350 has progressed in gradual stages through a long series of models. Even in the short life of the Turbo Compound there are a number of models reflecting engine improvements and USAF and Navy designations:

Model	Power Rating	Use
R-3350-30W	3250	Lockheed P2V
R-3350-WA	3500	Martin P5M
R-3350-85	3500	Fairchild C-119H
R-3350-34	3250	Lockheed C-121C
R-3350-972TC18DA1	3250	Lockheed L-1049C
		Douglas DC-7

Initial flight test of the TC engine was in November 1949, within four years after the initial Navy contract to make a design and performance study of this type engine. First production engine was delivered to Lockheed in December 1949 for installation in the P2V-4.

set of engines was operated to 1,000 hours. On tear-down they proved so clean that the Navy set the official overhaul time for one squadron at 1,000 hours and plans on extending all engines if this service test works out satisfactorily.

Sludging

Biggest single problem with the compound R-3350 has been the fluid clutch which connects the blow-down turbines to the crankshaft. In the compound engine three turbine assemblies are located 120 degrees apart around the periphery of the engine aft of the cylinders. Grouped exhaust gases from individual cylinders are routed through the turbines, which absorb power and through quill shafts and individual fluid couplings transmit the power to the crankshaft. The fluid coupling serves to absorb variations in turbine and crankshaft speeds, particularly during engine acceleration.

In service the fluid couplings proved troublesome. Oil flows through the coupling at about seven pounds per minute. The high rotational speed of the clutch served as a centrifuge, separating impurities from the oil. This formed a sludge-like composition which locked the clutch, preventing it from functioning. Sludging was so acute that the entire crankshaft could sometimes be turned by turning one of the turbine wheels.

This has been corrected. A new vortex-type coupling was designed which has been installed on all service engines and has eliminated the problem.

There have been the anticipated problems with the power recovery turbine assembly and related exhaust system. The turbine showed a tendency to grow during operation. This growth took up the close tolerances within the cooler cap and caused binding. It has been eliminated by new materials used in the turbine buckets.

Normally the engine manufacturer does not supply an exhaust system for a piston engine. Short stacks are used in testing and the exhaust system is designed to suit aircraft application. Because the blow-down turbines are integral with the exhaust system, Wright designed the complete system and plans on marketing it in the same manner as other engine parts.

'Y' Cracks

The exhaust system has been the source of many minor problems. Breakage of the front extension, and excessive wear and cracks at the "Y" pipes where the turbine housing and stacks connect has occurred. The "Y" cracks were at the welded joint between two stacks. By stamping these "Y" sections from stainless steel in two halves and then welding along the edges this problem was eliminated. Similar failures occurred at a gusset linking two sections of exhaust piping. Additional gusset plates and scalloped-edge welds, rather than ones with straight edges, have eliminated this problem.

Bushings in the accessory section of the engine, associated with the two-speed reduction gears, caused some difficulty, chips from them being found in the oil sumps. The bushings were cor-

rected and a fine mesh strainer, Lectromesh, was installed to keep foreign matter from circulating in the engine. This strainer has proved very effective.

One advantage is that, while turbine failure would normally require shutting down an engine, the turbine assembly is easily replaced. The operation can be compared with replacing an engine cylinder, and is possibly easier. The turbine and shaft are not balanced as a pair; consequently the turbine wheel can be replaced independently of the assembly if this proves desirable. All three turbine assemblies (complete) are interchangeable without rearrangement.

Wheel Balancing

It might be noted that the dynamic balancing of the turbine wheel is the only operation during overhaul that will require special equipment. A special mounting arbor designed by Wright is used with a Gisholt unit for this operation. The Gisholt unit is standard equipment for Pratt & Whitney operators in handling engine parts balancing but had not previously been required for Wright engines.

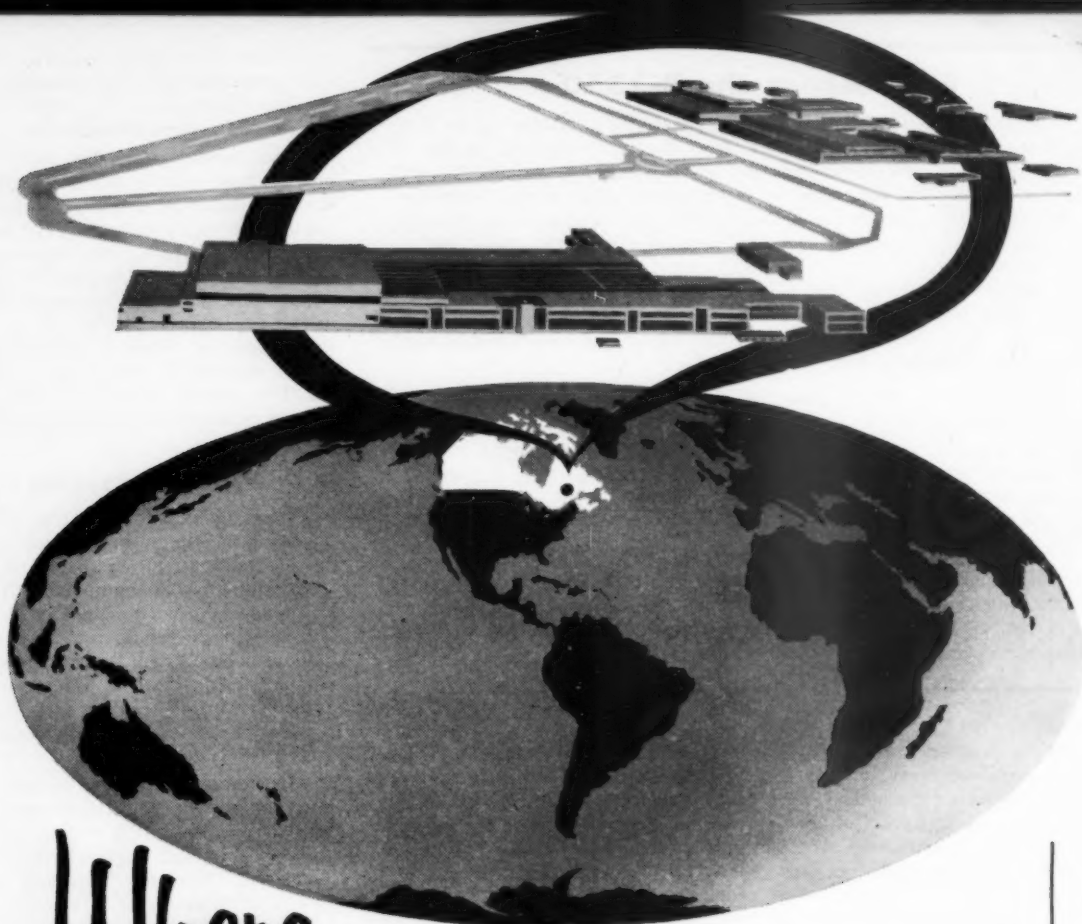
Operators expecting to benefit from interchangeability of parts between the regular Wright R-3350 engine and the Turbo Compound engines will be disappointed. Only the "nuts and bolts" will be interchangeable. The main cases, crankshaft, pistons, rods, all reduction and other major gears, etc. are different from the regular engine units, with the possible exception of the valves. The major change has been a general beefing up of parts.

UAL Gets \$10 Million in New Financing

Ten million dollars in 15-year, 3½% debentures have been sold by United Air Lines to help finance the \$36 million cost of 40 Convair-Liners and 12 Douglas DC-6B's scheduled for delivery this year and next. Metropolitan Life Insurance Co. has taken \$7.5 million while Mutual Life Insurance Co. purchased the rest.

This money, plus present cash, and a standby credit of \$16 million which UAL arranged last year with 33 banks but has not yet touched will pay for the new equipment.

The airline is also planning to call in the 36,000 outstanding shares of its 4½% cumulative preferred stock, with stockholders being given the option of converting their shares into UAL common on the basis of 4,219 shares of common for every share of preferred or cashing it in at \$102.50 per share plus unpaid dividends of 21¼¢ a share.



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CAS2-3UST

Action Needed on 11 Local Carrier Permits

Most of industry now operating under expired certificates; only five have been renewed.

WITH the bulk of the Nation's local-service airline industry now operating under expired route certificates, the Civil Aeronautics Board is forced to devote immediate attention to the important problems of renewing and revitalizing temporary authorizations of the local lines.

Only seven of the 18 local carriers operate today under unexpired certificates. The other 11, some of whose original licenses expired as far back as November, 1949, exist technically under a provision of the Administrative Procedure Act which insures life until a timely-filed renewal bid has been ruled on by CAB.

This is the second time around for temporary local-line certificates since the experiment in intra-area air transportation was begun six years ago. The 11 carriers now awaiting renewed certificates are in this position:

- **West Coast and Lake Central** have completed all procedural steps preliminary to CAB action on renewal bids; decisions are due any day.

- **Empire, Central, Piedmont, Midwest, Robinson and Wiggins** are entering the last stages of their procedural fights; decisions are expected within three to nine months.

- **All American, Southern and Island Air Ferries** are just beginning procedural steps, with public hearings slated within the next three months and CAB decisions estimated late this year.

To date, CAB has issued renewed certificates to Pioneer, Trans-Texas, Frontier, Wisconsin Central, and Southwest, with Florida Airways the only carrier denied a second chance. Still operating under original unexpired certificates are Bonanza and Ozark who face expiration dates of December 31, 1952, and September 26, 1953, respectively.

Problems attendant to a renewal bid are varied and become increasingly complex as the industry progresses. Originally, these lines were envisioned as small carriers which would feed trunk lines by carrying passengers and cargo from outlying districts to junctions for onward transportation by trunk carriers; this would be workable in reverse, also.

Change in Function

Now, a local line, though still retaining feeder functions, operates as an airline serving the needs of a particular trade area for transportation within that

area. Thus, certain problems not involved in original certification of these lines have become major issues in renewal cases. Among these are:

- **Should certain trunk-line stops** located in trade areas served by local lines be transferred to the local lines?

- **How can this be done** without permitting local carriers to transform themselves into trunk carriers?

- **Are the local lines**, or some of them, logical ones to operate interurban helicopter services rather than create an individual classification of helicopter lines?

There is also the perennial problem in all renewal cases—the question of duration. Most lines complain of difficulties in securing adequate financing when operating under three- or five-year authorizations. In many respects, they argue, the reluctance of investors, traced to the short duration of certificates, ef-

fects and sometimes discolors operating results upon which future life is to be gauged.

Also, it is generally recognized that the absence of an efficient, economical airplane for local-service carriers can be traced to the short duration of licenses, for no manufacturer is willing to undertake a large-scale, long-term project where his consumer may be out of business in three or five years.

On the other hand, CAB is faced with heavy outlays of Federal funds in the form of mail subsidy to develop the local industry and feels a tight rein is necessary until closer approaches to self-sufficiency are made.

Perhaps indicative of what the future may hold for the more successful lines was the report of CAB Examiner Ferdinand D. Moran last month when he recommended that Piedmont, owner of an impressive traffic and financial record, be granted a 10-year certificate "in recognition of its record and to encourage development of an adequate plane for local operations."

Up-To-Date Look at Local Airline Certificates

I. Certificates Expired—Decisions Due this Year:

Certificate Expired	Status of Renewal Application
All American ..Jan. 11, 1952	Hearing set for April 7, 1952.
Central .....May 14, 1950	Hearing held January, 1952.
Empire .....Dec. 31, 1950	Hearing held August, 1951; examiner for renewal to Dec. 31, 1955 and route extension.
Island	
Air Ferries ....Aug. 19, 1951	Hearing set for March 10, 1952.
Mid-West .....June 24, 1951	Hearing held Aug., 1951; examiner for renewal for 3 years from CAB decision and route extension.
Piedmont .....Dec. 12, 1950	Hearing held Sept., 1951; examiner for 10 year renewal and major route adjustments.
Robinson .....June 28, 1951	Hearing held February, 1952.
Southern .....Feb. 8, 1952	Hearing set for March 31, 1952.
Lake Central ..Feb. 6, 1951	Hearing held Feb., 1951; examiner for renewal to Sept. 30, 1954 and route adjustments.
West Coast ....Nov. 22, 1949	Hearing held April, 1950; examiner for renewal to Nov. 22, 1954.
Wiggins .....Mar. 31, 1951	Hearing held January, 1952.

II. Certificates Not Yet Expired:

	Expiration Date
Bonanza	Dec. 31, 1952
Ozark	Sept. 26, 1953

III. Certificates Renewed:

	Expiration Date
Frontier	Mar. 31, 1955
Pioneer	Sept. 30, 1954
Southwest	Sept. 30, 1954
Trans-Texas	Mar. 31, 1954
Wisconsin Central ..	Sept. 30, 1955

Note: Listings include only main certificates of the carriers, excluding those for individual segments which bear shorter expiration dates.

How Post Office Would Equalize Mail Pay

Proposed plan, involving ton-mile and piece-handling rates, is similar to rail system.

THE POST OFFICE Dept. wants to pay the airlines for carrying the mail on essentially the same basis that it pays the railroads.

It wants to make certain that it will not have to pay one airline more than another for carrying the mail over the same route.

Any element of subsidy would be kept completely separate, and PO payments to the carriers would be only for mail carriage. Its plan is based on the expectation that Congress will enact a law requiring subsidy separation.

New Plan

AMERICAN AVIATION has learned that the PO, which has been relatively quiet on the subject of how airlines should be paid for mail, is now at work drawing up its overall plan. It will probably be revealed in testimony before the House Interstate and Foreign Commerce Committee, which will hold hearings soon on several bills proposing subsidy separation.

Although many details remain to be worked out, here's how the PO wants mail pay handled:

A **line-haul rate**, which would be a standard ton-mile rate applicable to all carriers for the actual transportation of mail.

A **piece-handling rate**, which would be a charge for each bag or piece of mail loaded or unloaded from planes. It would cover all ground services connected with mail handling at a stop, including allowance for descent and ascent of the plane.

This system, similar to that used with the railroads, would establish the same rate for transportation of mail between the same points, the PO has stated.

There has been deep concern recently among some airlines over this very point. Capital Airlines, for example, carries mail at the CAB-established rate of 53c a ton-mile. Between Washington and Chicago, it operates alongside American, United and TWA, all on 45c per ton-mile pay.

Reports were that the PO intended to withhold mail from Capital in favor of the lower-cost lines. This policy would also affect other lines already on the 53c rate or about to go on it—National where it parallels Eastern, Western in favor of United, and Delta paralleling EAL.

However, a PO official told AMERICAN AVIATION that no orders had been issued to postal clerks or to other employees to withhold mail from 53c carriers, and that no such orders were planned in the immediate future.

Nevertheless, the problem remains, and the PO doesn't feel it can go on indefinitely placing mail on one airline when another can handle it cheaper. Congress, it feels, will ask questions.

And despite the fact that no immediate action is planned, the PO is on record as to how it feels. "The Postmaster General is . . . of the view that the Department cannot be bound to use high-rate carriers where lower rate carriers are available that afford similar service," said a PO letter to the CAB in the Capital mail-rate case.

"The Department is only justified in using such high-rate carriers where the mails would be expedited thereby; otherwise, mail traffic normally would go to the line offering the lowest favorable rate."

Report Denied

It was this letter that led to reports that the PO intended to withhold mail—reports which the official denied. It is unlikely that the present situation will be changed at least until the PO has presented its plan to Congress and sees what chance it has of adoption.

Here's an example of how the PO plan might work:

An airline operating between Washington and San Francisco with stops at Chicago and Denver would receive a line-haul rate of, say, 30c per ton-mile for all the mail aboard. In addition, it would receive a piece-handling rate of, for example, 12c per bag or pouch of mail destined for Chicago, the same for Denver and the same for San Francisco.

A carrier operating alongside this airline between Washington and Chicago would get the same rates. Thus, one would receive more pay than the other only if it were carrying more mail.

The 12c figure, of course, is only an example and bears no relation to what the final PO-computed rate might be. This rate would be intended to cover the cost of the stop—descent of the plane from cruising altitude, cost of handling the mail at the stop, and ascent of the plane to cruising altitude again. San Francisco mail wouldn't be affected by the Chicago stop—the only

pay for this long-haul mail would be the ton-mile rate and the piece-handling charge at destination.

The PO is also considering the possibility that this piece-handling charge may have to vary according to the size of the stop. In other words, New York, Chicago and other large cities might have a 12c rate, whereas smaller communities with less mail might have 20c or 25c.

Another possibility may have the 12c rate split—6c for mail off-loaded at a stop, and 6c for mail on-loaded.

The PO says it definitely wants a complete separation of mail pay and subsidy, and infers that CAB's "administrative separation" hasn't accomplished this. Under the CAB system, airlines are divided into seven classes, each with a different service and subsidy rate according to their need. Thus, the PO says, Capital at 53c carries mail on the same route as American at 45c. It thinks that its plan, patterned after the railroad system, is better.

First tip-off on the PO's plan came from A. C. "Chris" Hahn, executive director-transportation of the PO. Speaking at a recent Capital Airlines meeting in Cleveland, he said subsidy must be separated but the mail service mustn't be jeopardized in the process.

"In the first place, if the service is to be operated on an efficient business basis, the Postmaster General must retain his control of the movement of the mail by air . . ." Hahn said. "The question is whether the exclusive control of the movement of mail by air is to be exercised by the Postmaster General for the best interests of the postal service or whether it is to be subordinated to the rate-making power of the Civil Aeronautics Board."

Equitable Rates

There isn't true subsidy separation if the PO is forced to use a high-cost line when a low-cost one is available, he said, adding that the PO objects to paying one carrier more than another for carrying mail between the same points.

"That does not necessarily mean that there should be a flat rate applicable to all air mail transportation. To meet the contention that different types of air carriers require differing levels of mail pay, the rate structure can be refined, without sacrificing uniformity, by establishing two elements, a line-haul rate and a piece-handling charge . . .

"This rate structure would have the

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sound advantage of establishing the same rate for the transportation of mail between the same points. At the same time it would recognize the higher unit costs incurred at light traffic points through the piece-handling charge. Such a rate structure might well result in average rate differentials between carriers comparable to the differentials be-

tween carriers existing under the Board's administrative separation.

P. O. Requirements

"At the same time it would leave the Postmaster General free to move the mail strictly in accord with the postal service requirements . . ."

How the PO will make out with its

plan is difficult to predict, but one thing seems certain: if some system isn't established to straighten out the problem of pay on parallel routes, the high-cost airlines are eventually going to suffer by losing mail to their lower-cost competitors. It isn't likely that the PO will be willing to operate indefinitely under the present system.

FC-10 Rain Repellent Wins Pilot Support

Domestic and foreign airlines, air forces, show interest in silicone wax product.

SERVICE REPORTS on FC-10, a rain repellent for aircraft windshields and windows now being used by the British Royal Air Force, Canadian and Australian Air Forces, and a number of U. S. and foreign airlines and aircraft manufacturers, may indicate a trend toward decreased dependence upon mechanical windshield wipers on aircraft.

Report from Chicago and Southern Air Lines, which has used FC-10 for more than a year on its Douglas DC-3 and Lockheed 649A aircraft, states that C&S pilots strongly recommend its use. C&S operational experience indicates that light rains are repelled satisfac-

The U. S. Navy's Bureau of Aeronautics is currently testing FC-10 on carrier aircraft of the Atlantic Fleet. Air Force has procured quantities for laboratory tests at Wright-Patterson Air Force Base and has authorized the Strategic Air Command to conduct operational tests.

Now being marketed in the United States by the Regal Air Corp., FC-10 is manufactured in Toronto under license by Dow Corning Products, Fiberglass Canada Limited. The preparation was developed in 1944 by Dr. D. F. Stedman of the Canadian National Research Council at the request of the Royal Canadian Air Force.

The rain repellent, basically a silicone material, is applied to windshields and windows in a series of three waxes. It can be used:

- On all types of glass and plastics of any size or degree of curvature.
- At all temperatures from -40 degrees to 135 degrees Fahrenheit.

Ordinarily when rain strikes a windshield the drops spread out, forming sheets which obscure and distort vision. Raindrops striking a windshield treated with FC-10 are prevented from spreading but remain as globules. In this form, they are dispersed by the slipstream before they can cloud the glass.

FC-10 is marketed in kits each of which contains enough material for treating ten windows of average size. Claim is that the substance repels dust but that treated surfaces may be polished a number of times before reapplication is required, usually every 30 days. Chicago and Southern renews its applications on DC-3's every Number 3 check (300 hours) and on L649A's every Number 4 check (260 hours).

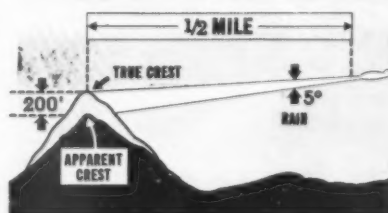
During all light icing conditions, vision through windshields treated by FC-10 is said to be improved, though no claim is made that the substance sheds ice. Normal de-icing by heat or alcohol may be used, however, without

affecting the water-repellent properties of the film.

Report by Dr. Stedman indicates two optical difficulties caused by rain on aircraft windshields. These are:

- **Poor vision**, which makes small objects such as other aircraft, trees, and power lines invisible to the pilot, sometimes with serious consequences.

- **Refraction errors**, resulting from the fact that windshield ripples act as prisms, deceiving the pilot into thinking he is higher than he is. In addition to this, haze caused by rain tricks the eye into recording a horizon below the true one. Both difficulties could combine to give errors of about five degrees in angle. A hill-top, for instance, a half-mile away could appear to be 200 feet lower than it actually is.



HOW RAIN on windshield can distort view.

Regal Air Corp reports that FC-10 has received favorable comment from Boeing Airplane Corp., Trans-Canada Air Lines, Gloster Aircraft Co., Ltd., Grumman Aircraft Engineering Corp., Royal Canadian Air Force, and A. V. Roe Canada Limited, whose Jetliner operates without windshield wipers. Swissair and Pan American World Airways are reported by Regal to be using the repellent operationally.

A service report written by a pilot of Gloster Aircraft Co., Limited, shows results of the repellent when it was used on a Gloster Meteor Mk. III flown at high speeds: "I first flew through light rain showers at speeds of 200, 300, 350, 400, and 450 mph. The side of the front panel to which the paste had been applied was pretty clear, and visibility was about two miles through it. The rest of the panels, without paste applications, were opaque."



Capital Press

DR. D. F. STEDMAN, developer of FC-10, sprays water on nose of B-25. Right side is treated with repellent; left side is not.

torily, but that heavy rains are not repelled fast enough to justify removal of mechanical wipers.

Wiggins Airways, Inc. Proposed Southern New England Service

	1952	Late 1953	1955 or Later
The Aircraft			
Model & Number	Eight DC-3's	Two S-55's	Ten 30-Place 'Copters
Aircraft Cost	\$640,000	\$300,000	\$5,000,000
Pilots	54	6	80
Daily Utilization	6.5 hours	6.4 hours	6.8 hours
Routes & Performance			
Daily Miles Scheduled	7,738	992	8,278
Performance Factor	90%	94%	95%
Trips Per Day	44	4	
Stops Per Day	144	56	
Average Leg	53.7 miles	17.7 miles	28.9 miles
Cruising Speed	170	86	140
Block Speed	135.6	72.9	116
Passengers			
Number Pass. Annually	176,478	30,350	746,303
Passenger Load Factors	43.38%	62.5%	65%
Passenger Yield (per mile)	5.92¢	8.43¢	8¢
Average Fare	\$7.77	\$4.74	\$6.40
Average Journey Length	131 miles	56 miles	75 miles
Costs & Revenues			
Insurance Rate on Hull	5.1%	10%	10%
Direct Operating Costs (flying)	32.05¢/plane-mile	35.46¢/plane-mile	57.31¢/plane-mile
D. O. C.—Maintenance	10.79	16.84	40.60
Depreciation	6.22	22.62	22.39
Total D. O. C.	49.06	74.92	120.30
Indirect Costs	45.90	29.23	52.10
Total Operating Costs	94.96	104.15	172.40
Passenger Revenue	52.70	42.27	166.40
Total Revenues	57	46.37	170.80
Break-Even Need Before Mail Pay	37.96¢	57.78¢	1.60¢

Local Service Helicopter Plan Outlined

Wiggins thinks answer to profits is in rotary wing craft and new sliding scale fare.

HOW the economic and operational problems of converting a marginal local-service airline into a promising helicopter passenger operation can be solved is outlined in exhibits filed with the Civil Aeronautics Board earlier this month by Wiggins Airways, "New England's Community Airline."

No single problem has haunted the local-service airlines more than the unavailability of an aircraft designed to meet the complex operational and economic problems of short-haul operation. Wiggins' experience in the southern New England area in the past two years stresses the nature of the problem. That experience resulted in a Board order aimed at dismembering the airline and reassigning its routes to other carriers.

Conversion of its present operation with five place Cessna T-50 aircraft to an all-helicopter operation is the core of Wiggins' case seeking renewal of

its operating certificate between Boston and Albany and extension of its routes to New York City. The program would be in three principal stages:

- **Replacement** of its Cessnas with eight Douglas DC-3's immediately.
- **Inauguration** of additional service in late 1953 with two eight-passenger Sikorsky S-55 helicopters.
- **Inauguration** of full-scale helicopter operations with a 30-passenger helicopter at some future date, probably in 1955, assuming such an aircraft is available commercially by them.

Higher Helicopter Fares

Wiggins' solution to many of the problems associated with such a transition may point the way to long-range trends in this infant field. Passenger fares, as Wiggins sees it, will be higher for helicopter services. They will average 8.43c per passenger mile in the transition operation, as compared to

6.175c per mile for Wiggins' current fare level.

Of particular interest is the fact that the fares would be on a sliding scale, downward with increasing distances, as follows:

First 10 miles 20c per mile
Next 10 miles 10c per mile
Beyond 20 miles 6c per mile

Translated into actual fares this means it would cost \$2.00 to travel 10 miles, \$3.00 to travel 20 miles, \$3.60 for 30 miles, \$6.00 for 70 miles, and \$7.80 for 100 miles.

Linear Routes

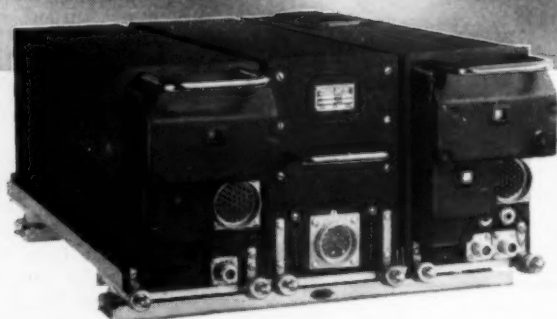
Downtown heliports, Wiggins feels, are essential to economic helicopter operations. Unlike the present mail-carrying operations of Los Angeles Airways and Helicopter Air Services in Chicago, which represent radial operations from a central point, Wiggins' helicopter routes would be linear between cities. While this calls for downtown heliports it also requires airport connections at key cities. Except for a few long-haul flights, Wiggins would charge a flat rate of 50c extra for flights beyond the city of destination to the airport.

The proposed helicopter fares are high but New England is accustomed to high-cost transportation, even for surface travel. At present the passenger in this area pays airline fares (including ground connection by limousine to the cities) ranging from 7.4c per mile to 18c per mile. These fares average well above the proposed Wiggins rate for passenger helicopter operations.

This is one of the factors, according to Wiggins, which makes southern New England a particularly good proving ground for passenger helicopter operations. Other factors include the area's generally poor surface transportation, densely populated nature, and high income per capita. A recent report of the Federal government shows that southern New England, accounting for only 0.5% of the U. S.'s area, has 5.1% of its population and 5.6% of its total income.

Wiggins is no novice in the helicopter field. During World War II the company manufactured helicopter components for Sikorsky, and since 1947 has had a helicopter division operating a Bell B-3 in crop-dusting activities.

Despite this background, equipment might still prove the biggest hurdle for a new helicopter operation. If Wiggins' certificate is renewed the company would immediately order two S-55's, and anticipated delivery would be made in 9 months time by the fall of 1953. Availability would be intimately tied to the international situation. While several twin-engine helicopter designs



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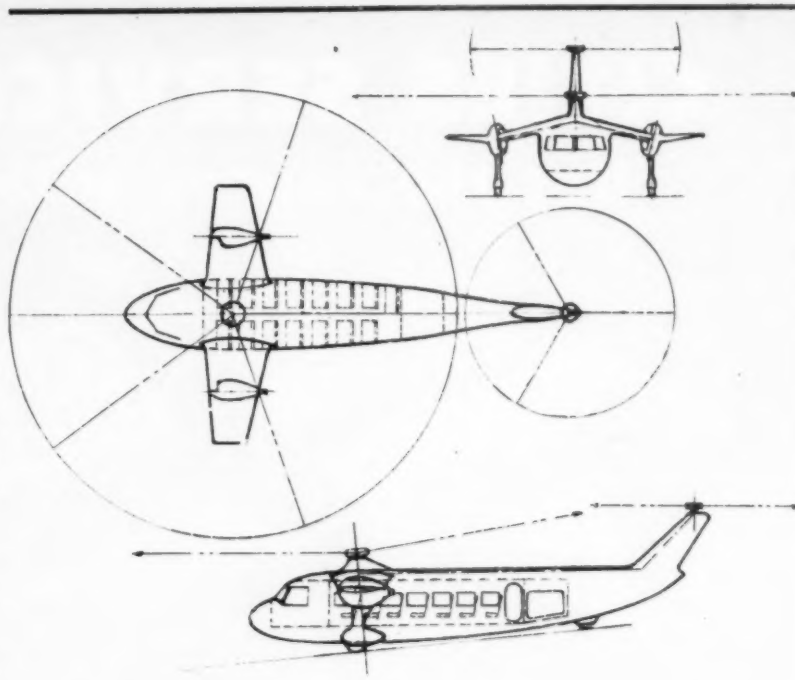
In the South: Arkansas Fuel Oil Co.

are under development, progress production, and availability of these craft for this proposed full-scale operation remains vague.

Airframe maintenance, Wiggins notes, is the most critical factor in the projection of operating costs, but "it is reasonable to be extremely optimistic about the future downward trend in maintenance cost of new helicopter transports." In line with this "optimistic" thinking Wiggins bases its maintenance costs on 2.4 manhours maintenance required per flying hour, contrasting with three hours required today, a 20% reduction in some 18 months time.

A closer look at specific service life and overhaul intervals of the S-55 shows that the current 6,000 hours between airframe overhauls would be set at 10,000 hours, service life of the main transmission would be doubled, tail blade life tripled, and main rotor blade life upped from 1,200 to 3,000 hours. Similarly, engine overhaul life is now at 600 hours, but projected at 1,000 hours for Wiggins, while overhaul life of other components are upped proportionately.

A true comparison of the three operations—DC-3, S-55, and future 30 passenger helicopter—is virtually impossible since route mileage, level of service, passenger volume anticipated, etc., would be so widely variant.



30-PASSENGER HELICOPTER of 1955 as visualized by Wiggins Airways includes stub wings, retractable landing gear, and aircraft-type fuselage. Grossing 25,000

pounds, this helicopter would have 6,000 pounds payload on 150-mile leg and would cruise at 140 miles per hour. Estimated cost: \$500,000.



WHEREVER YOU
GO
WHATEVER YOU
FLY

ARC EQUIPMENT

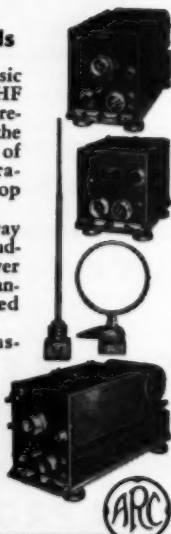
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ARC Type 11A meets basic needs by providing VHF transmission, LF range reception suitable for the exacting requirements of night instrument operation, and rotatable loop navigation.

ARC Type 17 is 2-way VHF equipment, including tunable VHF receiver and one or more 5-channel, crystal controlled VHF transmitters.

ARC Type 12 (illustrated) gives you advantages of both Type 11A and Type 17 systems.

All ARC airborne equipment is designed for reliability and performance, not to meet a price.



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Daily Plane Utilization International

		Sept.	Oct.
American	4 eng. pass.	5:07	5:12
Braniff	4 eng. pass.	8:07	8:23
C & S	2 eng. pass.	9:11	9:22
	4 eng. pass.	8:32	8:48
Colonial	4 eng. pass.	6:19	5:58
Eastern	4 eng. pass.	10:22	10:15
National	4 eng. pass.	9:39	9:26
	cargo	3:04	5:30
Northwest	4 eng. pass.	10:06	9:25
Panagra	2 eng. pass.	3:44	3:51
	4 eng. pass.	6:16	5:59
	cargo		0:45
PAA			
Latin Am.	2 eng. pass.	3:58	3:28
	4 eng. pass.	7:31	7:00
	cargo	4:01	4:46
Atlantic	2 eng. pass.	0:43	0:28
	4 eng. pass.	6:45	6:19
Pacific	4 eng. pass.	6:18	6:16
Alaska	4 eng. pass.	8:51	7:07
	cargo	6:44	10:43
TWA	4 eng. pass.	7:50	7:42
	cargo		2:10
United	4 eng. pass.	5:27	5:24

Local Service

		Sept.	Oct.
All American	DC-3	6:53	6:52
Bonanza	DC-3	4:18	4:30
Central	DC-3	5:42	6:12

Empire	DC-3	4:41	4:51
Frontier	DC-3	7:31	7:20
Lake Central	DC-3	6:07	6:00
	Beech Bonanza	0:47	0:52
MCA *	DC-3	6:00	6:04
Mid-West	Cessna 190	2:55	2:53
Ozark	DC-3	6:28	5:53
Piedmont	DC-3	8:38	8:08
Pioneer	DC-3	7:21	7:35
Robinson	DC-3	5:37	6:42
Southern	DC-3	5:52	5:56
Southwest	DC-3	5:54	5:57
Trans-Texas	DC-3	5:51	6:13
West Coast	DC-3	4:40	4:43
Wiggins	Cessna T-50	2:13	1:59
Wis. Central	DC-3	6:49	6:32

* Figures are for local service route 106.

UAL Eliminates Flight Operations Regions

Latest step in United Air Lines' plan to centralize flight operations control is the elimination of the Eastern, Western, and Pacific regions. Under the new set-up, a manager of flight operation has charge of all flights in his area.

United's flight operations managers are M. H. Fay at New York, H. L. Knoop at Chicago, F. M. Grisom at Denver, W. E. Larned at Los Angeles, W. D. Williams at San Francisco, and William Groen at Seattle.

AMERICAN AVIATION

Can TV Help with Instrument Landings?

Television use seen possibility by Weather Bureau in ground-air reports from end of runways.

By RICHARD FULLER

UNITED STATES Weather Bureau, working with the Air Navigation Development Board, is conducting a broad investigation into methods of determining end-of-runway visibility and ceiling height and transmitting this information visually and verbally to pilots in airport traffic patterns as well as to air traffic controllers.

Potentiality of television for picking up and transmitting this information graphically has led the Weather Bureau to investigate lines of research which include:

- **Use of television cameras** at threshold areas of instrument runways with receivers located in or near control towers. A pilot making a night landing could be informed from the tower how many runway lights are visible from the runway's threshold or middle marker, giving him definite information on runway visibility.

- **Equipping airplanes** with television screens tuned to end-of-runway cameras, enabling a pilot to see for himself while he is still five or ten minutes out how the runway looks and how conditions change as he makes his approach.

- **Setting up television cameras** so that they scan the skies vertically, showing observers the structure and location of clouds.

- **Use of hemispherical viewing screens** at runway thresholds which could transmit horizon-to-horizon images to a central location.

Supporting these possible techniques for providing pilots with late and accurate weather information, an analysis is being conducted by the Weather Bureau of the visual tasks a pilot must perform at the various stages of his approach. Purpose of the analysis is to find the means of helping the pilot cope with the fast-changing scene he encounters on his approach to a runway in instrument weather.

Joint Investigation

First definite step to improve weather observation at airports was begun, in August, 1949, when a joint group of representatives of the CAA, C. B. Air Transport Association, and Weather Bureau inaugurated a runway observation project at Washington National Airport.

Purpose was to determine the desirability of taking weather observations

at the approach end of the instrument runway. Two observational sites were set up at the airport: one, called "Mirador," was installed on top of the airport's terminal building, approximately 70 feet above the runways. The other, called the "runway" site, was located 300 feet west of the south end of runway 36 and approximately 3,000 feet south-southeast of Mirador.

After a seven-month period in which ceiling and visibility reports from Mirador and runway sites were recorded and compared, the joint working group had a number of recommendations to make relative to runway threshold observations and need for further investigation. The project report points out that:

- **Efficiency and safety are enhanced** in instrument approaches by observation procedures which present the weather conditions the pilot will enter on his final approach.

- **Data compiled showed sharp variance** in weather observed at Mirador and runway sites. Ceiling observations at the two points varied 100 feet or more 61% of the time. Twelve per cent of the ceiling observations varied 300 feet or more, and 25% of the visibility observations varied more than one-half mile.

- **From Sept. 28, 1949 to March 8, 1950**, CAA's approach-control records show that 61 scheduled air carriers were permitted to land when regular Mirador observations were below limits, but the runway reports were at or above the limits. Report estimates that fewer than 25 aircraft were prevented from landing by the reverse situation.

As part of its program of research into better methods of measuring and forecasting weather and determining its effects on air traffic (AMERICAN AVIATION, Jan. 7), ANDB authorized the Weather Bureau to begin the current investigation late in 1951. Upon the basis of the Joint Working Group's recommendations that the experimental program at Washington National be continued, the Weather Bureau has added extensively to the equipment and techniques initiated in the earlier investigation.

First move was installation of remote-reading equipment, obviating necessity for manning of the runway observation post. Two transmissometers (which measure visibility) have been installed at the threshold area of Na-

tional Airport's instrument runway. Each transmissometer consists of two units: a light source and a receiver. The receiver measures the attenuation of light it receives from the source, converting the illumination into a pulse rate. As the pulse rate increases, the degree of visibility increases. Illumination received generates a voltage which records degree of visibility on a graph located at Mirador, thus enabling a centrally located observer to monitor visibility at the remote runway threshold.

One unit is set up at the middle marker located at the extreme apex of the approach lighting system which extends out into the Potomac River. The other is installed at the runway end.

New Ceilometer

Also located at the middle marker is a remote-reading instrument for measuring ceiling height, called a rotating-beam ceilometer. This is a new instrument developed by the Weather Bureau's Instrument Division. It also consists of two components: a light projector and a receiver. The projector and its beam rotate once every 24 seconds, while the receiver, an electric "eye," peers fixedly at the zenith. An oscilloscope located at Mirador serves as an indicator. Its circuits are so designed that a spot of light circles four times for each complete revolution of the projector, jumping outward from the center whenever the spot on the cloud base crosses the field of vision of the "eye."

The jump of the indicator spot measures the time interval between the moment the beam is horizontal and the instant the beam, cloud base, and detector field intersect. Through application of trigonometry, this time measure gives a direct reading of ceiling height from a circular scale on the periphery of the tube. It permits height of cloud to be read at Mirador every 24 seconds, with previous ceilometers giving readings only once every six minutes. Other ceiling-measuring instruments are located at the end of the runway and at Mirador.

The current investigation is now concerned with evaluating data recorded and registered by these instruments. Observations at the middle marker, the end of the runway, and at Mirador are compared with each other and with ordinary visual observations so that qualitative equations can be made between them.

Meanwhile, investigations with television and other new types of equipment are going ahead at Weather Bureau laboratories.

New Products



Steam Cleaner

A steam cleaner which hooks into existing steam lines and utilizes steam generated for other plant purposes is being marketed by Kelite Products, Inc. The two models of the Fireless Steam Cleaner are high volume units, with capacities of 150 or 250 gallons per hour. Only two connections are necessary for operation of the units: one to the steam source and another to an electrical outlet. Combined with a caster mount, the compact unit can be moved to any work area where steam cleaning is required.

A Kelite Steam Cleaner Pump (110v or 110-220 VAC) replaces the usual siphon head method of injecting cleaning compound into the steam line. Dry steam is introduced into the gun along with precise amounts of cleaning compound. The nozzle concentrates the cleaning blast within a small area for effective control of the cleaning operation.

Address: **Kelite Products, Inc.**, 1250 North Main Street, Los Angeles 12, Calif.

Telemetering

New telemetering receiving stations which are said to incorporate advancements in reception, separation, observation, and recording of FM signals have been developed by Pacific Division, Bendix Aviation Corp. This new equipment is available in a number of standard components which can be selected in various combinations to meet the specific requirements of the user.

The stations are designed to receive frequency-modulated radio signals using continuous or commutated subcarriers, the frequency of each subcarrier being varied according to the quantity being measured. A maximum

of 14 continuous subcarriers can be received and recorded simultaneously. Up to 27 signal channels can be separated from commutated subcarriers, each signal being recorded as a continuous trace. The output signals can be recorded by means of galvanometer oscillographs and cathode ray oscillographs, and can be displayed visually on panel indicators and oscilloscopes.

Address: **Pacific Division, Bendix Aviation Corp.**, North Hollywood, Calif.

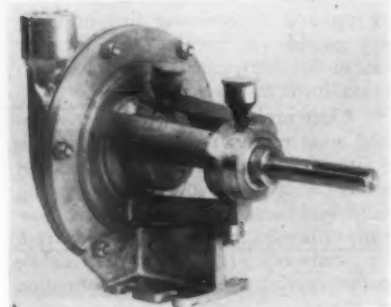
Built-in Generator

A built-in generator has been developed for use with Towmotor electric pallet trucks, eliminating the need for conventional electric storage batteries and recharging, and providing constantly available power. Called "Towmotor Model W with Ready-Power," the new unit is an adaptation of the

Spray Pump

Columbia Exporters has announced availability of an improved pump for aerial spray work. Manufactured in Portland, Ore., the new pump, called the Simplex Pump, is equipped with a special carbon seal said to prolong the pump's life. It revolves with the shaft, preventing it from wearing and scoring at that point.

The new pump will handle the usual commercial chemicals used in

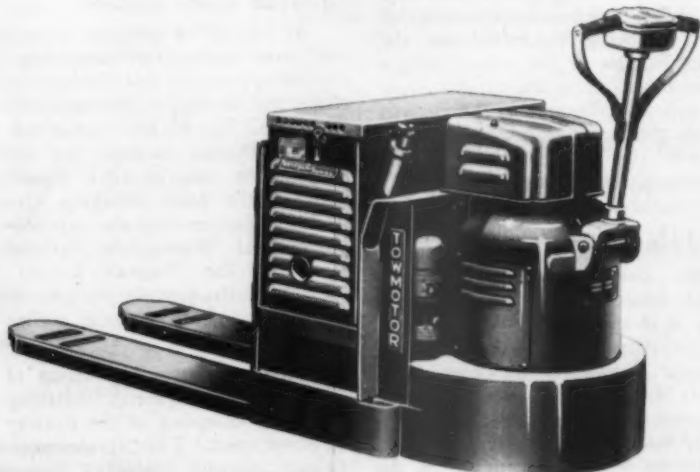


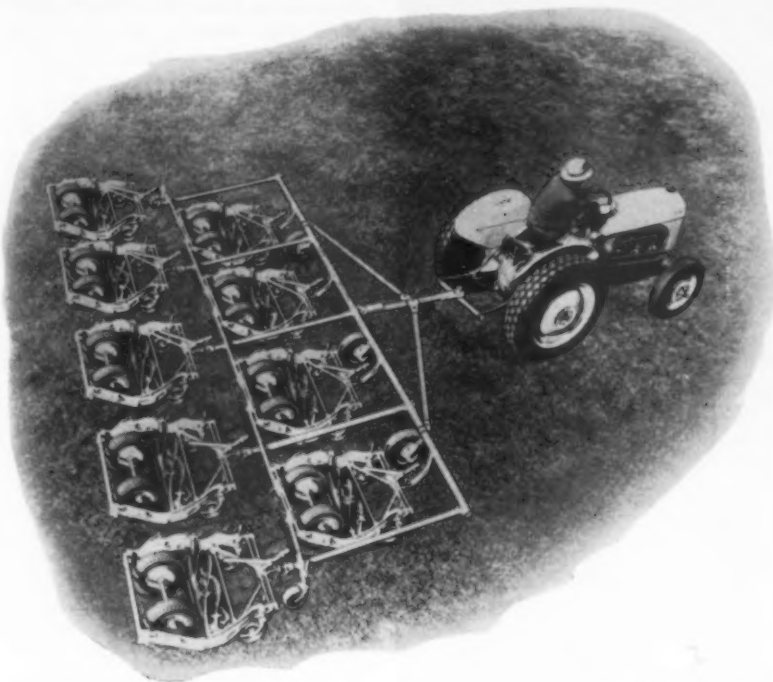
spraying without damage or serious deterioration, according to the manufacturer.

Address: **Columbia Exporters, Inc.**, 732 S. E. 11th Ave., Portland, Ore.

company's standard electric pallet truck, with a small, gasoline-powered generator supplying constant, maximum voltage. The mechanism is mounted in the standard battery compartment, with gasoline engine, fuel tank, starting battery, and all accessories enclosed in a steel housing.

Address: **Towmotor Corp.**, Cleveland, Ohio.





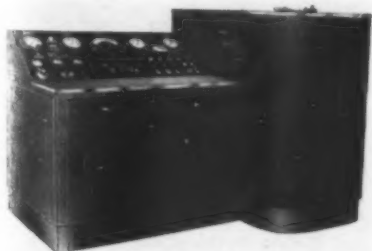
Airport Mower

A new high-speed, heavy-duty, rear-wheel-drive gang mower has been added to the line of gang-mowing equipment manufactured by Roseman Mower Corp. Manufacturer claims that tall, lush, heavy, wiry, and other difficult growths of grass can be cut with the new mower at high speeds with uniform cutting results.

The rear-wheel-drive feature results in uniformity of cut without raising or lifting of the rear of the mower unit. Because the mower has no side wheels, its over-all width is shorter, giving the unit stability on rough ground, ability to cut close to vertical objects, and increased maneuverability.

The mower is equipped with a hand-reel adjustment which permits adjustment of the bed knife without tools. The mower is available in 3, 5, 7, and 9 gangs.

Address: Roseman Mower Corp., 2610 Ridge Rd., Evanston, Ill.



Governor Tester

Greer Hydraulics, Inc. has announced full production of its new

Government machine to test the latest double-capacity, double-acting, reversible-pitch, and fully feathering propeller governors. The machine is now being supplied to the military services and the aviation industry, and distributed to foreign markets by United Aircraft Export Corp., Division of United Aircraft Corp., East Hartford, Conn.

The new test machine has been redesigned by Greer in close cooperation with Hamilton Standard. The unit has a $7\frac{1}{2}$ horsepower drive and a pump providing pressures to 1,500 psi. It has an adjustment to simulate the sensitivity of the particular propeller governor under test. Governor response, hunting, and performance characteristics can be checked by the Governmatic, a shop-type machine.

Address: Greer Hydraulics, Inc., 454 Eighteenth St., Brooklyn 15, N. Y.

Light Seat

A new double and triple full-reclining, folding seat to fit all types of multi-engined aircraft has been developed by Burns Aero Seat Co. The seat, interchangeable with conventional high-density seats, is mounted to the floor at the four points of contact of the legs. In stowing, the backs release and instantly fold and lock in position, and the legs are folded under the seat to complete a compact package.

The folded seat is then stowed on end by inserting the two stowing fittings located under the outboard arm rests into the two floor fittings that originally held the outboard legs. A simple overhead hinged fitting secures



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Chase Assault Transports demonstrated at Exercise "Southern Pine" functions which they alone are able to perform: delivery of heavy equipment into forward combat areas by landing; immediate evacuation of casualties from front lines.

Men suffering injuries at "Southern Pine" were evacuated to base hospital right from the jump zone — quickly, efficiently, safely.



the seat in stowed position. When not in use, this fitting folds flush with the cabin wall. Stowing this unit at floor level allows a triple seat clearance below the overhead baggage rack.

This type of installation requires



none of the conventional cabin side mounting structures or baggage rack alterations. Outstanding features include: light weight (double, 40 lbs.; triple, 69 lbs.); full foam rubber cushioning on flexible vinyl straps; simplified mechanical recline locks with override; backs that automatically lock in upright or folded position.

Seat is described as reducing installation costs to a minimum, lessening the weight factor by elimination of heavy side mounting structures, and reducing stowing time to a matter of a few minutes.

Address: Burns Aero Seat Co., 3900 Cohasset St., Burbank, Calif.



Sealing Compound

A semi-liquid plastic compound for sealing aircraft windshields is being manufactured by Electro Cote Co.

Called Ten-X, the new product will

adhere to any dry surface, including metal, rubber, glass, and wood. Manufacturer states that it effectively seals out all wind, weather, and water and will not shrink when dry, remaining pliable. Its sealing qualities are said to be unaffected by vibration or temperature changes.

Ten-X is available in clear, black, and aluminum colors, and is marketed in quantities ranging from 3-oz. tubes to gallon cans. A special tool, enabling the operator to apply the sealer deep under rubber windshield channels, is available in a kit with four 5-oz. tubes of Ten-X at \$5.50.

Address: Electro Cote Co., 1939 W. Minnehaha Ave., St. Paul 4, Minn.



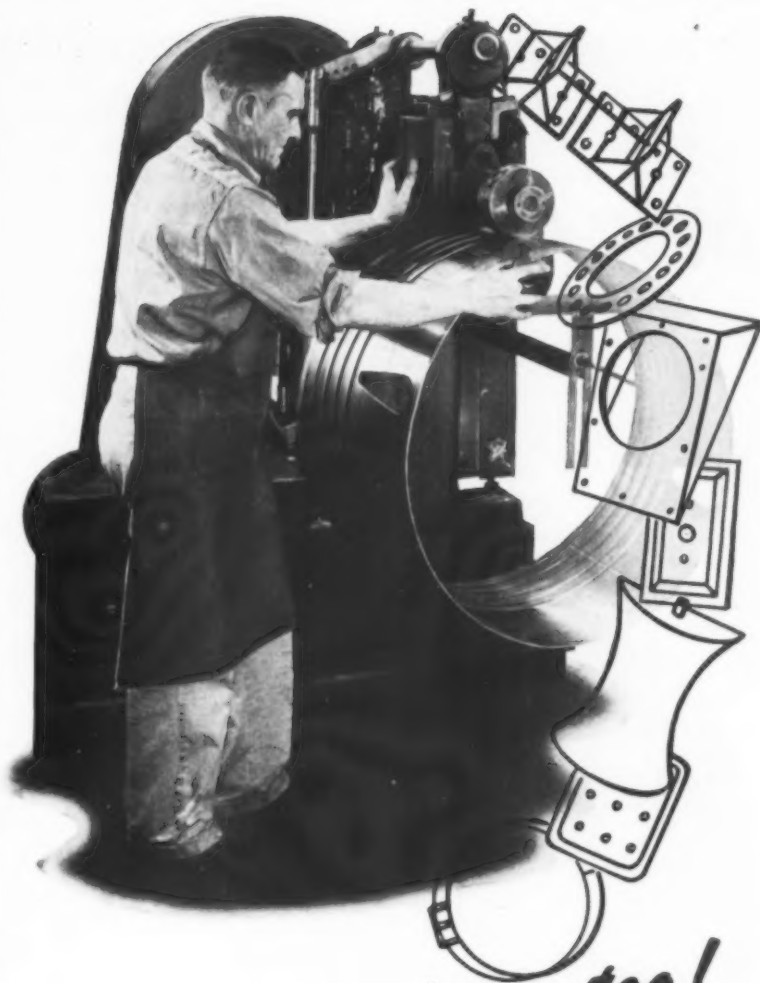
Flight Bag

Now being offered by Allied Brief Case Co. is a new flight bag for airline or private pilots known as flight bag No. 200. New bag consists of two units: a portfolio with individual pockets for carrying manuals, charts, documents, and other papers; and a traveling bag for carrying clothing, toilet articles, and accessories. These units are designed to be carried as one piece or individually. They are separated and reassembled by means of a series of snaps.

Portfolio is equipped with a heavy mesh all-around zipper. Traveling bag has a double all-around zipper, permitting it to be opened flat.

Address: Allied Brief Case Co., 186 Fifth Ave., New York 10, N. Y.

FEBRUARY 18, 1952



... Surprised us, too!

We looked over the list of fabricated parts we've turned out in the last ten years and we sure were surprised. All shapes and sizes!

The technique that went into these products is based on "Shop Control", the precise care that our technicians exercise in every phase of production. And it is "Shop Control" that has brought us an industry-wide reputation as a truly unique and reliable subcontractor.

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New Record!

This year people are flying United Air Lines at the rate of around a quarter of a million passengers monthly — a new winter record. While other forms of travel have been increasing in cost, United's fares have stayed within about 4% of the 1941 level. Yet your United Mainliner ticket represents a far greater value than it did then, with almost twice the speed . . . larger, more spacious, more luxurious planes . . . improved schedule dependability . . . finer meals . . . and direct service to more cities (83 in all today) on the only airline that links the East and Midwest with all the Pacific Coast and Hawaii. Call or write United Air Lines or an Authorized Travel Agent for your *best* travel buy — reservations on THE NATION'S NUMBER 1 COAST-TO-COAST AIRLINE.

PASSENGERS • MAIL • EXPRESS • FREIGHT • AIR PARCEL POST



One of the scheduled airlines of the U.S.





DART GAME at Capital Carnival was operated by Willson Offutt, manager of interline relations, shown wearing his "interline tie." Besides giving prizes to the dart throwers, he gave a spiel on how much business each airline on the board gave Capital and how the amount compared with what Capital gave them.

◀ **SYSTEMWIDE SALES MEETING** was attended by almost 300 people.

Capital Aims for \$45 Million Goal in '52

Improved passenger service gets top priority this year, Cleveland meeting is told.

By ERIC BRAMLEY

WHEN CAPITAL Airlines held a systemwide management and sales meeting in early 1949, the ambitious goal of \$20 million before mail pay was set as the revenue quota for the year. And there was some surprise when the goal was exceeded.

Only three years later, however, the ante has been more than doubled and there seems to be no doubt among the company's personnel that they'll take in \$43,600,000 in non-mail revenue during 1952.

How this will be done was explained at Capital's management and sales conference in Cleveland on Jan. 23-24. Attending were 300 people, including headquarters staff, all sales and operations managers, and a few guests. It was the first systemwide conference since 1949.

The success of the meeting was summed up by Maj. Jack Berry, who's been Cleveland's airport commissioner longer than most folks can remember. Maj. Berry said he's often been accused

of being a "griper" and of not agreeing with a lot of things in the aviation field, but he added: "This is the most terrific thing I've ever seen an airline do, and they've done it perfectly."

In 1952 Capital's primary aim will be better service for the customer—faster ticketing, baggage handling, cleaner airplanes, better on-time performance, etc. One of the meeting's slogans was "Progress Through Service." Even the operations department's part of the show emphasized service, rather than going into details of overhaul times, etc.

This improved service, Capital anticipates, will bring the following results for the year:

- \$45,000,000 in total revenue, against \$38,702,493 last year.
- 2,300,000 passengers, against 2,000,000 in 1951.

The \$45,000,000 is to come from these sources:

- \$40,600,000 from passengers and excess baggage.
- \$1,700,000 from freight.
- \$1,400,000 from mail.
- \$1,300,000 from express.

The two-day meeting also presented:

- A new sales-meeting technique, the Capital Carnival.

- A new sales incentive for employees—an all-expense trip around the world.

- An operations-department incentive plan—award of one month's salary to the five operations managers whose stations show the biggest spread between revenues and expenses.

The Capital Carnival was a somewhat stupendous production staged during the evening of the first day. On the second floor of the Tudor Arms Hotel, scene of the meetings, a group of connecting rooms was decked out like a carnival. Stage money was issued to all comers, and there were numerous ways to win prizes, such as tossing baseballs into barrels, throwing darts, etc.

The door prizes included five all-expense trips to Miami Beach and Bermuda (donated by four hotels and by Pan American World Airways), four Girard-Perregaux watches, Hartman luggage, and \$175 cash. The latter, donated by Lockheed Aircraft Corp., went to the three employees making the best estimates of how many revenue passenger-miles Capital's Constellations had performed since being put into service



SALESMEN MEET in a "gag" discussion of their problems. Left to right, Bill Hamill, district sales manager, Youngstown; Bill Armstrong, Cleveland sales representative; Casey Britt, DSM, Washington, and Ken Smith, DSM, Detroit. The \$4.52 was a take-off on the company's revenue quota for this year.



GOOD INTERLINE RELATIONS were stressed at meeting by having representatives of other airlines present. Left to right, Margaret Robinson, reservations manager, Eastern Air Lines, St. Louis; Walter Wortham, American's Los Angeles reservations mgr.; David LeBlanc, TWA's Boston reservations mgr. and George Hunt, asst. reservation mgr., Continental, Denver.

(109,816,787 as of 10:45 that night).

A large number of the prizes for the games were donated by other airlines, and they were worth winning—billfolds, sleeper bags, pens and pencils, key chains, etc. Cameras, aluminumware, clocks, lighters, and other prizes were also offered.

The giveaway carnival had some definite purposes. Each booth was operated by one of Capital's revenue-producing departments—interline, agency, air freight, and the others. And while you were waiting to throw the darts or toss the balls, you got a short pitch from the pitchman on what his department was going to do, plus an armful of literature on such subjects as goals and sales contests.

No Hangovers

Equally important, the carnival kept all the people together for an evening. Instead of going out to see the town, with resultant big heads the next morning, the crowd not only had some fun but also talked some business. No drinks were served. The door prizes were spaced out so that few left before 11:30 p. m. It was an outstanding success.

The round-the-world trip, said to be the first ever offered as a sales prize, will go to the employee selling the most international business. Capital receives a 7½% commission on all international travel which it sells, and in turn pays 2½% to the employee making the sale.

Thus, the employee winning the 21-day world trip (furnished by Pan Am and American Airlines) will also have some spending money. Other prizes for international sales include trips to Britain, Rome, Paris, and Bermuda.

A large part of the passenger revenue that Capital wants in 1952 is earmarked to come from definite sources. The department heads functioning under Jim Austin, vice president-traffic and sales, explained these sources as:

Interline, \$10,000,000: Willson Offutt, manager of interline relations, stated that Capital's goal is to get a dollar's worth of business from every airline to which it gives a dollar's worth, rather than a passenger-for-passenger exchange. Capital will route connecting business to the airline giving it the fairest return, equipment and schedules being equal.

In 1951, the company got back 83c for every interline dollar—\$10,005,000 "paid out" and \$8,350,000 received. Offutt asked the salesmen to remember that 25% of this year's passenger revenues will come from other lines.

Military business, \$8,000,000: N. B. Fry, assistant to Austin, said Capital expects to get \$2,000,000 in official military travel, and \$6,000,000 in unofficial travel.

The military will spend \$162,000,000 on air, rail, and bus tickets in the present fiscal year, and the airlines can hope to get \$48,000,000, of which Capital wants \$2,000,000. A recent survey of some Capital trips showed that 25% of the travelers were in uniform, Fry said.

Military Angles

He warned that it will be necessary to change the thinking of some military transportation officers who are still railroad-minded, and he also gave the sales managers some reminders on securing business: know the commanding officers at nearby bases; know the Red Cross and the chaplains to keep tabs on emergency travel; keep up with changes of station; meet the boats in port cities.

Travel agencies, \$5,000,000: Please travel accounts for about 25% of the airlines' business, against 63% for the railroads, and agents can be of tremendous help in bringing the airlines new customers by tapping the

vacation market, V. K. Stephens, interline and agency manager, said. Capital is looking for \$1,250,000 more in 1952 than last year from agents, whom Stephens called "our favorite five percenters."

Conventions and trade shows, \$3,600,000: The potential of this market is seen in the fact that there are 19,000 conventions and trade shows yearly, plus 50,000 sales meetings, attended by 9,000,000 people. Bill Urquhart, manager of group and convention sales, told the meeting. Convention prospects are "sitting ducks" because there are so many lists of members available, he added.

Direct Mail

Capital this year will continue its successful direct-mail postcard promotion of convention business, but will increase the size of the cards and will mail them third-class instead of second-class because of the postage increase.

Charters of athletic teams and other groups probably won't be as large this year because equipment is tied up on regular schedules. However, Pan American has agreed to furnish planes whenever possible to handle charters sold by Capital, and the company will continue to pay its employees 2% commission on any such business they bring in.

Revenue expected from the four sources listed above totals \$26,600,000. Adding to this the \$4,400,000 to come from Guy Springer's department (mail, freight and express) increases the total to \$31,000,000, leaving \$14,000,000 to be realized from general passenger business to reach the \$45,000,000 goal.

That passenger handling problems can completely nullify a good telephone sales job was the point emphasized in a presentation by Fred Klein and Maurice deGroff, of reservations and ticketing. They revealed that this year Capital will:

Experiment with a new airport

RECEIVING AWARDS from J. B. Franklin, v.p.-operations and maintenance (right), for outstanding work in operations during the past year are, left to right, Joe Ward, operations, sales, and maintenance manager at Memphis; Pete Pietranice, supervisor of ramp and cabin service, Detroit; Norman Purcell, senior agent, Cleveland; Fred Hull, Harrisburg operations manager; Ed Lamberth, DOM, Huntsville.



check-in procedure, using the new Pittsburgh airport as the guinea pig. Ticketing will be combined with check-in and there will be a separate counter for baggage.

Have payload control in full operation. This office will decide what is best for the greatest number of passengers in cases of interrupted flights, stops passed over, and other irregularities.

Expand use of automatic ticketing, although before going into any new machines, the company will investigate inexpensive mechanical devices for roll-type tickets.

Urge more coordination and supervision to eliminate no-shows. The passenger, it was pointed out, isn't always solely responsible for this situation, and employees can do much to cure it. In 1951, Capital lost \$2,776,320 in potential revenue from no-shows.

In 1952, the company will spend \$1,500,000 on advertising, over half of which will be in newspapers in premium space on pages two and three. Five ads will appear in national magazines. The advertising presentation (agency is Lewis Edwin Ryan, of Washington) was effectively done on a completely darkened stage with luminous signs.

Theme of the public relations department's skit was a quotation from Abraham Lincoln: "Public opinion in this country is everything." The skit was in the form of a television show, featuring messages from prominent individuals whose pictures were flashed on the screen while they talked via wire recording on such subjects as passenger handling, publicity, and public relations. Included were Sen. Everett Dirksen (R., Ill.); Ed Hastings, of the Waldorf-Astoria Hotel; Wayne W. Parrish, editor and publisher of AMERICAN AVIATION; Drew Pearson, columnist; Betty Hutton, movie star; Jim Tatum, Maryland football coach, and others.

One of the meeting's high points was a clear and concise financial "seminar" by Ray Lochiel, vice president-treasurer. He illustrated a carrier's vulnerability to traffic decline by pointing out that on Jan. 11 Capital completed 100% of its mileage, 90% of it on time,



TOSSING HOOPS FOR PRIZES at Capital's Carnival are, left to right, Bill Flynn, airport ticket office manager, Norfolk; Bill McGarry, district sales manager, Atlanta; Read Chalfant, DSM, Minneapolis; Bill Hughes, DSM, Milwaukee; "Flip" Connel, Chicago traffic representative; Ed Lamberth, district operations manager, Huntsville.

but lost \$600 for the day because the load factor was only 53%. Indirect expenses, he warned, are particularly sensitive to traffic decline. It cost 2.6c to produce a passenger seat-mile selling for 5.5c, but a 50% load factor almost wipes out the margin, he said.

One of the airlines' big problems in a period of rising costs is accumulation of reserves over depreciation for replacement of flying equipment, Lochiel stated. He also pointed out that in 1952, Capital will have obligations of \$3.2 million, including \$2.7 million on Constellations already delivered or ordered, plus a \$500,000 sinking fund payment.

The operations department, under Jim Franklin, vice president-operations and maintenance, told the salesmen that it is going to give them "better-looking airplanes, and they'll run better." On-

time performance and low intermediate ground times will also be stressed.

Franklin, Ted Hardesty, operations manager, R. L. Waganek, maintenance manager, and the others who participated stated that:

900 to 2,400 lbs. more payload can now be carried in Capital's DC-4's following change from R-2000 7M1 to 7M2 engines.

Newly-developed chart for computation of weight and balance went into systemwide use Feb. 1 and is expected to eliminate delays.

On-time performance has been good but must get still better. Recent figures showed Capital 86% on time, TWA, 84%; Eastern, 73%; United, 67%; American, 60%.

A new system of hand-to-hand re-

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ceipts to control silverware is saving about \$1,000 per month. The missing silverware problem can also be alleviated by "eliminating souvenir-hunters from our own ranks."

As was the case at the 1949 meeting, J. H. ("Slim") Carmichael, Capital's president, took a relatively small part in the program so that the departments would have a maximum amount of time to present their plans. At the closing session, however, he devoted time to answering any and all questions from the floor.

He also warned the group that although the company's position is substantially better than it was five years ago, there can be no let-down in 1952 because a drop-off in revenues could put the airline flat on its face.

At the meeting three years ago, Capital was only about 18 months past bankruptcy. However, morale was high—so high that one well-known industry figure who was present shook his head in disbelief and remarked, "I didn't think it could happen, but this outfit's caught on fire." Our impression of the 1952 meeting is that the switch from red ink to black hasn't made the salesmen complacent. The drive is still there.

Obituary



P. M. Godehn

Paul M. Godehn, Chicago attorney and for 18 years a director of UAL, died Jan. 31 in Chicago following an illness of three months. Mr. Godehn, member of the law firm of Mayr, Meyer, Austrian and Platt, was born in Moline, Oct. 29, 1891. A University of Michigan graduate, he was one of the pioneers in air transportation law, his first work in this field having been for Boeing Air Transport when that predecessor of United was formed in 1927. His home was at Barrington, Ill.

AMERICAN AVIATION

INDUSTRY PERSONNEL

James B. Edwards, former chief project engineer on the Douglas DC-4 and DC-6, has joined Hiller Helicopters as chief engineer . . . **Joseph L. Dorn**, formerly with Grumman, has joined Gyrodyne Co. of America as controller . . . **Grand Central Aircraft Co.** named **James L. Morgan** director of material for the Glendale and Tucson plants and **Donald Cook** director of industrial relations for both divisions.

Jack and Heintz, Inc., has appointed **Ralph J. Eschborn** staff engineer, while



Sosine



Eschborn

E. H. Sosine has been designated resident representative at Seattle . . . **R. Dixon Speas**, formerly with Avro Canada and American Airlines, has been named a consultant on turbine powered transports to General Electric's Aircraft Gas Turbine Department.

Kaman Aircraft selected **J. L. Raesler** chief of engineering administration, **D. W. Robinson** chief of test and development, **S. R. Thompson** assistant chief of research, **R. H. Daniels** assistant to Robinson and **G. F. Quigley** assistant project engineer . . . **Northrop Aircraft** named **Kenneth F. Hallinan** assistant Washington representative and **Edgar U. Peyronnin** assistant director of management control.

Clinton B. McKeown has been appointed technical superintendent of B. F. Goodrich's aeronautical products division . . . **Greer Hydraulics** selected **Arthur K. Atkinson, Jr.**, sales manager of the industrial division . . . **Pacific Airmotive Corp.** promoted **Boyd Dahle** to chief engineer, **E. A. Jachacz** to project engineer-pneumatics and **Roy E. Gass** to design layout engineer.

W. K. Houpt and **Edmund P. Aldous** were appointed sales manager and assistant controller, respectively, for the Wright Aeronautical Division.

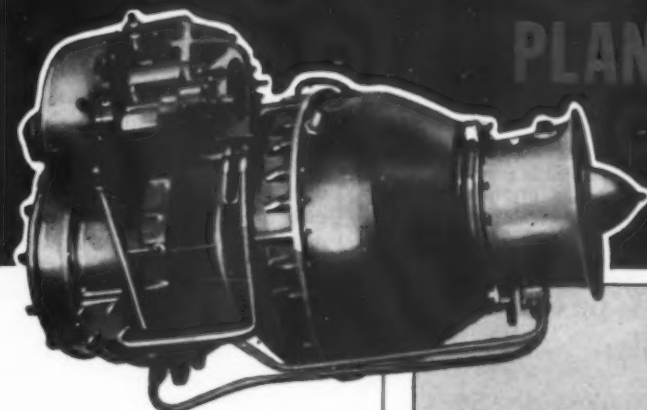
Brewitt Aircraft Co. selected **G. P. Martin** manager of the research and development department and **Robert L. Johnson** manager of manufacturing . . . **W. M. (Pappy) Clay** has been chosen director of missile development for **Northrop Aircraft, Inc.**, and **Richard L. Black** has replaced him as F-89 project engineer.

United Aircraft Corp. chose **Robert E. Hach** corporation counsel while the **Hamilton Standard Division** named **William K. Martin** factory accountant . . . **Cecil R. Barlow** has been appointed head of contract administration and plant services for **Norden Instruments, Inc.**

A. Tweedle has been selected factory manager for **Luscombe Airplane Corp.** . . . **Lockheed Aircraft Service** chose **Theodore W. Wilkins** assistant commercial sales manager and named **John Vornbaum** to replace him as supervisor of contract administration for **LAS International**.

Soon

Gas Turbine Power for MEDIUM-SIZED PLANES



Performance characteristics heretofore confined to larger aircraft will become available for planes of medium power, with the entry of Continental Aviation & Engineering Corp., into production of an advanced new series of gas turbines.

The Continental-Turbomeca family of turbines includes units of four basic types. These engines have undergone exhaustive tests, and have much to offer, both for the aircraft industry and for various ground applications—military and commercial—where lightness and compactness are essential.

We welcome opportunities for consultation relative to all applications—unconventional as well as obvious.

THE CONTINENTAL-TURBOMECA FAMILY COMPRISES THESE 4 TYPES

JET POWER for target and trainer aircraft, or booster power on bombers and transports. Models in this series develop 300 to 900 lbs. thrust.

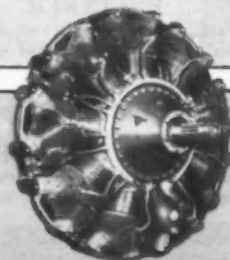
SHAFT POWER for driving helicopter rotors, or propellers of fixed-wing aircraft, for operating electric generators, and for other uses. 225 to 400 h.p.

DUCTED FANS developing 300 to 800 lbs. thrust, forecasting higher speeds when installed in small and medium civilian and military aircraft of suitable design.

AIR COMPRESSORS useful for starting large aircraft turbines, for tip jet helicopter rotor drives, as portable heating units, and for operating pneumatic tools where portability counts. Up to 2,000 cu. ft. of air per minute at 50 psi.

C. A. E. ALSO BUILDS THE R-975

A 325-h.p. version of the Continental R-975 radial air-cooled engine, with refinements adapting it especially for helicopter applications, is in production at C.A.E. for such craft as the Piasecki HUP-1 and HUP-2 and the Kaman HOK. Its ability to meet the exacting requirements of helicopter use assures important applications in fixed-wing aircraft too.



CONTINENTAL AVIATION & ENGINEERING CORPORATION

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SUBSIDIARY OF CONTINENTAL MOTORS CORPORATION

KAISER METAL PRODUCTS

Formerly Kaiser-Fleetwings
Bristol, Penna.

• This company which has pioneered in Aircraft Design and Development for 20 years, is now expanding its Aircraft Division and offers unusual opportunities to high caliber, experienced—

AERONAUTICAL ENGINEERS

—who are interested in growing with a rapidly expanding organization, devoted to Design and Development in Aircraft, Aircraft Armament and Related Components.

DESIGN ENGINEERS and DRAFTSMEN

- Airframe
- Power Plant
- Equipment
- Electronics
- Instrumentation

SR. STRESS ANALYSTS CHIEF CHECKER

To set up and supervise aircraft design checking group.

CHECKERS

STANDARDS ENGINEER

To exercise control over Drafting and Engineering Standards and Specifications.

MATERIAL ENGINEER

To coordinate material and equipment requirements on major aircraft projects.

TOOL PLANNERS TOOL DESIGNERS

Experienced in Aircraft or Allied Fields.

PROCESS ENGINEERS

Experienced in Writing Aircraft Process Specifications.

PRODUCTION ENGINEERS

To provide liaison & coordination between Design, Tooling & Mfg.

CHIEF METHODS ENGINEER

To set up and supervise methods group. Aircraft background essential.

CHIEF COST ESTIMATOR

To supervise Estimators in Aircraft Projects.

TOOL ENGINEERS

Extensive Aircraft Experience Required.

• Qualified men who can fill the listed positions are urgently requested to contact our Employment Manager at—

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Extra Section

By William D. Perreault



THE WISDOM of erecting a 150-foot control tower at New York International Airport was questioned by a pilot attending the annual meeting of The Institute of the Aeronautical Sciences in New York. An unidentified spokesman noted that Idlewild Airport is some 10 times the size of La Guardia Field, that the area on which the central buildings are being built (including the tower) is as big as La Guardia, and that runway headings and the tower location are such as to prevent a pilot from running interference with the latter. The pilot retorted that the pilot caught in an emergency might well find his plane in this area. Replied the tower defender: In that case the pilot'll be in trouble: there's going to be a twelve story terminal building adjacent to the tower.

One of the real shortcomings in personnel relations between the airlines, and employees remains the matter of handling unorganized personnel. Wages of unorganized workers progress slowly, if at all, and the incentive wage for supervisory positions disappears as union wages increase and non-unionized workers wages move in smaller increments. This is reflected in the current efforts of maintenance foremen to organize to provide equitable wage and benefit scales reflecting their responsibilities.

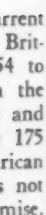
An idea of the extent to which the Douglas DC-7 has cut into current turbo-prop transport territory is indicated in the case of the Bristol 175 Britannia. The 175 has not yet flown, and is scheduled for delivery in 1954 to British Overseas Airways Corp. In an article prepared for publication in the BOAC house organ appears the comment: "The economical cruising speed and maximum cruising speed is something over 360 miles an hour; thus the 175 is over 50 miles an hour faster than any of its likely competitors." American Airlines and Douglas both cite the DC-7 as a 363 m.p.h. aircraft. This is not meant to detract from the Bristol 175, a plane which shows considerable promise. It is simply an interesting relationship. BOAC has 25 Bristols on order.

Incidentally, the Bristol 175 has an interesting solution to the problem of coach-versus-luxury interior arrangements. It will use seats mounted on rails and movable bulkheads. Seats can be set at varying pitches on the rails and four, five or six seats abreast can be provided. Movable bulkheads can be arranged to suit varying ratios of passenger and freight. For first-class service five-abreast seating will be used for 74 passengers, while coach arrangements will provide for 90 passengers.

When we trained flight crews in use of survival equipment we always felt poorly equipped to do an effective job, having only book knowledge of conditions in the tropical jungles, the frozen North and the implications of environment on survival in a lifeboat in the North Atlantic. We note that the U. S. Air Force is doing something to correct this condition. In the man-made "howling blizzard" of the Arctic Weather Hangar at Eglin AFB, students of the School of Aviation Medicine, who will later instruct crews in such matters, get an opportunity to build their own shelters, live on survival rations, etc. It's a good start.

Each year at this time AMERICAN AVIATION has sponsored awards to airline engineers and maintenance men for outstanding work in their respective fields. These awards have been presented during the ATA's annual Engineering and Maintenance Conference in the early spring. Postponement of the conference until fall has prompted AMERICAN AVIATION to delay announcement of the contest and details on how it will be handled. There will be awards this year, as in the past, but final details and dates will not be released until later. Meanwhile we hope you'll keep the matter in mind.

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TION

Not only do many leading airlines look to Esso for their petroleum product needs, but also many executive aircraft and private plane owners prefer Esso Aviation Products, and look for them at the airports they use.



U.S. DOMESTIC AIRLINE REVENUES AND EXPENSES FOR NOV. 1951

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
American	\$ 12,723,816	\$10,958,616	\$ 686,665	\$ 270,931	\$ 662,451	\$ 116,180	\$ -27	\$ 12,040,045	\$ 6,149,168	\$ 5,890,877	\$ 683,771
Branniff	1,430,034	1,205,948	123,851	31,000	35,842	9,830	24,423	1,303,048	592,187	710,861	126,986
Capital	2,905,524	2,571,969	87,884	81,637	86,686	14,820	5,588	2,842,230	1,367,464	1,474,766	63,294
Caribbean	76,796	56,393	16,438	-	3,189	397	575	73,706	27,024	46,682	3,090
C & S	1,036,037	919,458	59,096	22,370	18,108	9,464	3,947	960,282	461,566	498,716	75,755
Colonial	359,276	300,864	57,368	2,537	3,366	1,041	7,107	430,290	185,505	244,785	-71,044
Continental	793,740	638,462	96,661	7,064	13,636	4,979	22,527	763,560	405,287	358,273	30,180
Delta	2,045,002	1,807,307	78,739	38,126	63,395	21,103	5,259	1,747,678	818,849	928,829	297,324
Eastern	6,826,163	6,351,501	142,776	135,473	97,069	82,971	5,789	6,166,759	3,077,505	3,089,254	659,464
Hawaiian	267,494	222,912	1,357	8,332	27,235	4,343	1,015	349,746	124,142	225,604	-82,252
Inland*	284,866	225,028	49,792	3,146	4,669	1,982	-	242,386	111,376	131,010	42,480
NAA**	778,136	616,682	114,985	7,531	11,090	4,722	-	742,765	334,570	408,195	35,371
National	2,145,854	1,825,489	51,459	14,863	110,840	35,573	70,057	1,826,017	909,644	916,373	319,837
Northwest	519,443	411,216	87,476	9,231	6,678	1,214	-	611,637	305,263	306,374	-92,194
Northwest	2,678,949	2,179,828	229,696	57,714	85,191	11,701	687	2,913,224	1,551,038	1,362,186	-234,275
Trans Pacific	139,192	89,928	25,581	578	1,625	705	19,770	137,941	54,317	83,624	1,251
TWA	7,697,076	6,617,236	500,084	237,568	232,377	68,643	4,691	7,184,034	3,641,306	3,542,728	513,042
United	9,969,646	8,154,342	826,425	277,880	380,675	68,901	181,755	8,128,559	3,759,349	4,369,210	1,841,087
Western*	1,034,470	906,006	56,924	14,909	10,766	4,710	765	878,519	408,247	470,272	155,951
TOTALS	53,711,514	46,057,185	3,293,897	1,216,910	1,854,688	463,279	371,601	49,342,426	24,283,807	25,058,619	4,369,088

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
 ** Figures do not include operations of local service segment (Route 106) awarded NCA by CAB in the Pan Am Air Lines Investigation Case. Figures covering operations of route 106 are carried separately on local service airlines summary sheets.

NOTE: These figures are taken from monthly reports filed by the airlines with the Civil Aeronautics Board. The data are tentative and subject to later change.

SUMMARY OF U.S. INTERNATIONAL AIRLINE TRAFFIC FOR NOV. 1951

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	U. S. MAIL TON-MILES*	FOREIGN MAIL TON-MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES	REV. TRAFFIC TON-MILES	AVAILABLE TON-MILES	% AVAILABLE TON-MILES	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMP. LISTED
American	9,119	6,526,000	11,840,000	55.12	14,400	5,787	800	166,578	891,141	1,627,629	54.75	233,523	232,613	100.00	
Branniff	3,088	6,304,000	15,377,000	41.00	22,047	5,219	....	96,182	750,357	2,205,588	34.02	358,559	353,915	99.31
C & S	1,623	2,009,000	6,395,000	31.42	4,376	555	....	72,272	288,371	885,670	32.56	138,272	139,260	99.29
Colonial	2,403	1,880,000	3,225,000	58.29	1,667	388	....	8,949	214,496	397,588	55.34	62,014	60,468	100.00
Eastern	5,430	7,741,000	14,981,000	51.67	42,819	....	....	53,625	935,586	2,638,767	35.46	252,736	249,911	98.29
National	7,058	1,582,000	3,546,000	44.61	1,300	....	3,180	33,091	199,909	660,527	43.41	65,122	62,880	96.08
Northwest	5,897	9,753,000	17,372,000	56.14	151,821	27,442	22,624	792,147	2,037,737	2,985,079	68.26	538,641	584,689	92.05	
Panagra	9,395	10,805,000	18,029,000	57.93	43,131	25,283	211,796	....	1,483,151	2,513,346	99.01	492,064	481,110	99.40
PAA	55,326	52,619,000	93,619,000	56.21	264,974	57,184	....	2,644,350	8,321,817	13,283,119	62.65	2,342,064	1,811,474	99.87
Latin Amer.	24,985	37,398,000	62,109,000	60.21	485,396	154,279	....	1,440,791	6,285,076	8,173,780	76.91	1,191,879	98,299	98.29
Pacific	6,579	23,986,000	36,858,000	65.08	323,232	43,033	....	816,600	3,791,034	5,289,318	71.75	781,575	773,530	99.63
Alaska	3,788	4,410,000	11,195,000	39.39	39,976	....	....	493,232	1,005,844	1,559,056	64.52	244,294	236,774	96.01
TWA	10,507	26,265,000	43,844,000	59.91	358,564	115,565	....	779,473	4,159,548	6,261,188	66.43	1,077,070	1,056,384	96.83
United	3,284	8,134,000	12,742,000	63.84	75,846	....	....	60,369	998,593	1,837,376	54.35	240,882	255,598	94.24
TOTALS	148,482	199,412,000	351,132,000	56.79	1,829,949	434,735	238,400	74,577,699	31,362,660	50,100,031	62.60	8,082,613	7,490,485	98.10	
* Includes air parcel post.															
NOTE: Figures include both scheduled and non-scheduled operations. Data in above tabulations were compiled by American Aviation Publications from reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Branniff to South America; C & S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient and Honolulu; and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures.															

U.S. INTERNATIONAL AIRLINE REVENUES AND EXPENSES FOR NOV. 1951

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	U. S. MAIL REVENUES	FOREIGN MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
American	\$ 386,902	\$ 310,783	\$ 10,800	\$ 11,018	\$ 294	\$ 35,307	\$ 5,093	\$ -	\$ 409,558	\$ 224,965	\$ 184,593	\$ -22,656
Branniff	643,063	430,344	169,766	11,155	-	18,081	11,979	-	767,774	365,082	402,682	-124,701
C & S	333,636	143,953	154,438	1,010	-	23,537	7,878	-	267,217	141,868	125,349	66,419
Colonial	114,774	101,236	8,860	384	-	3,227	586	-	122,734	51,888	70,846	-7,960
Eastern	398,193	349,727	32,108	-	-	11,797	4,560	-	388,625	254,488	134,137	9,568
National	116,602	102,586	688	-	2,574	8,464	2,270	-	168,249	53,986	114,263	-51,647
Northwest	1,351,421	684,316	316,706	49,357	7,826	265,518	9,927	-	1,275,707	608,815	666,892	75,717
Panagra	1,255,889	1,000,312	51,900*	43,704	97,020	-	39,625	7,509	1,167,820	495,011	672,809	88,066
PAA	5,008,246	3,206,035	602,250	154,685	-	825,918	99,186	83,420	5,868,290	2,473,198	3,395,092	-860,044
Latin Amer.	5,217,279	3,051,630	1,142,910	264,966	-	411,639	110,615	196,984	4,755,455	2,378,418	2,377,037	461,824
Pacific	3,176,704	1,792,743	929,606	61,494	-	303,347	20,646	-	2,708,965	1,615,683	1,093,282	469,735
Alaska	481,648	256,124	116,000	-	-	100,975	6,503	-	413,921	186,263	227,658	67,727
TWA	3,823,763	2,220,848	738,549	211,139	-	339,251	11,907	112,062	3,460,841	1,639,302	1,821,539	362,922
United	624,895	453,357	57,512	-	-	15,380	2,106	-	788,010	472,824	315,186	-163,111
TOTALS	22,933,015	14,103,994	4,332,093	808,912	107,714	2,362,461	332,881	399,965	22,563,156	10,961,791	11,601,365	369,858

* Panagra's U.S. mail pay accrued on basis of temporary mail rate order of October 17, 1951.

NOTE: Data in above tabulations were compiled by American Aviation Publications from reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Branniff to South America; C & S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient and Honolulu; and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures. Data are tentative and subject to later change.

Letters

(Continued from page 11)

gained. A personnel manager can tell a lot about a man from his application blank but to get at the concrete things such as willingness to learn, ability to meet people, and his personal habits of neatness and cleanliness, he might well lift the receiver and ask his district sales manager what kind of an employee he would make.

And the DSM would know from working with him for the past six or eight months. If the home office was out of state it would make far better use of NRSA passes by knowing a little more about the man who would or would not make the trip. The man from

the school working on the program would also benefit by knowing just what to expect when he starts in the way of salaries, training positions, fellow employees and mainly what is expected of him . . .

Training Program

Professor Gifford and Mr. Koontz mentioned a training program for junior executives. What college graduates would be better qualified than these men who would have already proven they are interested? Today we are losing so many good aviation men to other fields—men who could develop the industry even more and help put it on a more solid foundation. We are losing these men because they hold a degree in Air Transportation and feel they are worth more

than the average \$185.00 that the airlines pay during a probationary period. If a sense of pride could be put into these men knowing they may be picked for executive training more men would stay in the industry.

And then we have the union problem. We have been told many times that a high school graduate could learn the business that I had studied to learn—it's just that I would have a better chance for advancement. BUT!! Here is where Mr. Union may step in and say, "Just a minute, Mister. Your airline is represented by our union and this high school boy has a six month's seniority and he has a right to bid for that next job." In some cases a union seems to put a lackadaisical attitude in a man's mind. He pays his dues and lets the union do his arguing for a higher position and pay. Men with executive ability don't think along these lines. They know they have to produce to get ahead but when they do produce they don't want a seniority list staring them in the face. I don't think the men picked for executive training by the airlines would have to join the union because they would be a little different than the men just starting. If you pick these men from the group working part time for the airlines on this training program a lot more would stick around the industry.

This letter may cause some yawns, some raised eyebrows, some stroking of chins, and some thunderous dissents from all angles, but it's at least an idea. Let's see what they all think of it.

(NAME WITHHELD BY REQUEST)



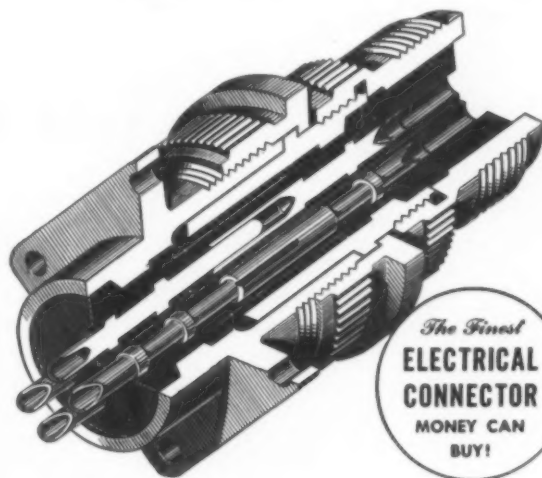
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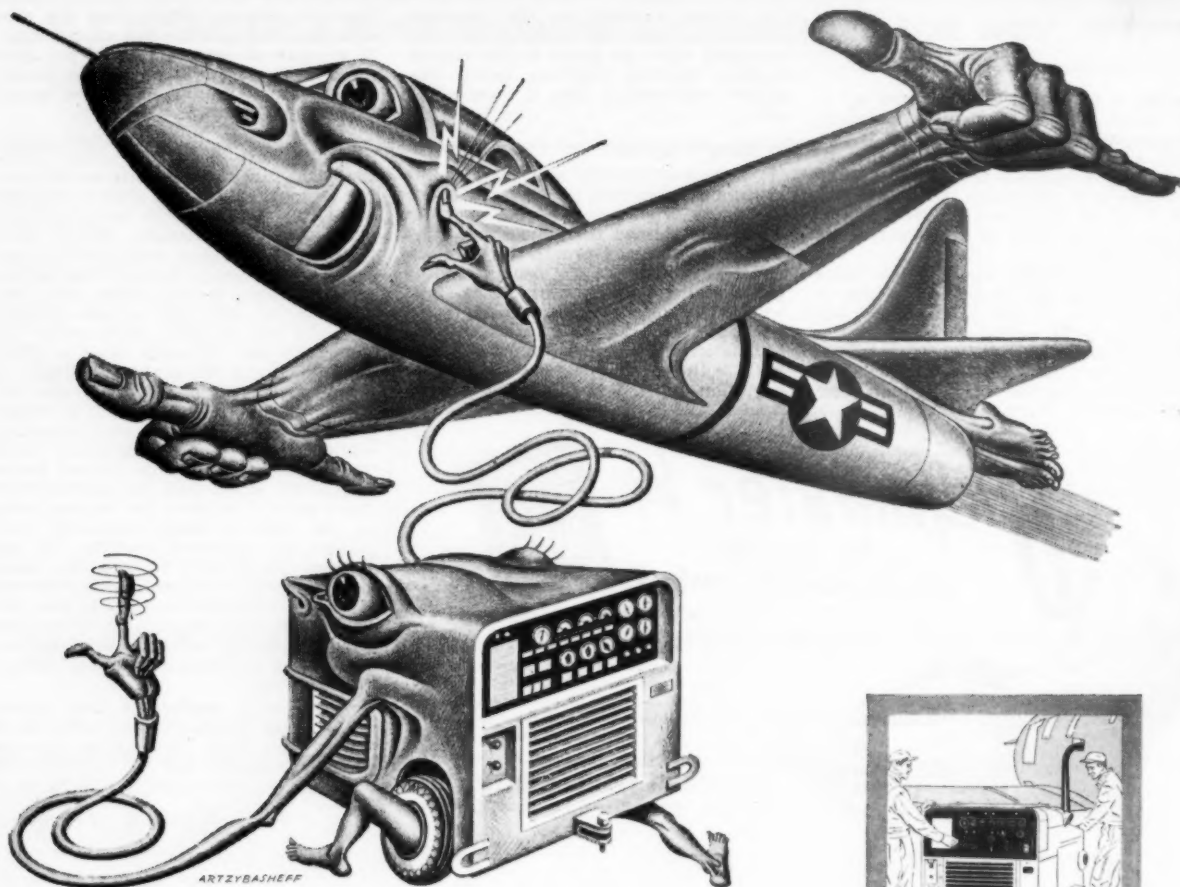
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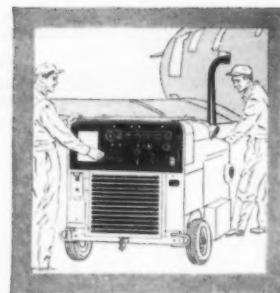
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Airline People

TRAFFIC & SALES

Jack M. Slichter has been promoted by Western Air Lines to director of passenger service. He was formerly director of flight schedules.

Max King appointed by Pan American World Airways to post of Northern California area manager. For the last year and a half, King has been secretary to Gov. Earl Warren of California and before that was d.t.s.m. for United Air Lines at Sacramento.

L. J. Priester, manager of tariffs and schedules for Chicago and Southern, elected chairman of the Air Freight Tariff Committee for 1952. M. E. Sullivan, Western Air Lines' director of traffic, is outgoing chairman.



Shirk

Dutton

Western Air Lines has expanded its staff at Long Beach, Calif., and named George Cain d.s.m. and A. H. Mann station mgr. Cain formerly held the dual responsibilities for sales and service and Mann was station mgr. at San Diego. Jordon S. Neel succeeded Mann at San Diego . . . John S. Shirk, former Albany, N. Y., sales mgr. for American Airlines, is now dist. mgr. of cargo sales for the company at Los Angeles . . . Pan American has assigned Bert Torrance to Tokyo as airport traffic mgr. . . . In two newly-created sales posts, BEA has named G. E. Allen, sales supt.-overseas, and J. H. M. Whitton, supt. of direct sales . . . William A. Davis appointed manager of Lake Central Airlines' traffic and operations office in Louisville, Ky. Davis joined LCA in September after 15 years with American Airlines . . . Chicago and Southern has named Wayne Schweitzer as c.s.m. in Shreveport and Joseph Cooke, Jr., sales rep. in Indianapolis.

OPERATIONS-MAINTENANCE

R. P. Dutton, former communications supt. of the Atlantic Division of Pan American, has joined the Collins Radio Company. Dutton was replaced in the Pan Am post by William F. Wallace, Jr.

E. L. Graham promoted by Eastern Air Lines to supt. of flight engineers from chief flight engineer.

Francis C. Thomas is now maintenance manager for Slick Airways.

Pan American has named three new station managers in its Latin American Division. They are Patrick H. Wildenbur at Maracaibo, Frank Taylor at Marín, and James F. Carroll at St. Lucia . . . Paul May named station manager at Cumberland, Md., for All-American Airways . . . John W. Bates has been appointed ass't station manager for Eastern Airlines, in Charlotte, North Carolina.

WHY THE DISTRIBUTOR? PART 5

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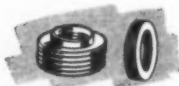
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Close-up view of winch with cover removed, showing detail of cable crank and shaft mechanism.

Airline Commentary

By Eric Bramley



WED' LIKE to discuss a problem that's a serious one for the airlines, and ask them if there's anything they can do about it.

We recently spent a couple of days in two relatively small off-airline communities in Pennsylvania. There we found an appalling lack of knowledge about how an airline operates. This lack of knowledge is going to keep people away from air travel.

Our visit to these towns was shortly after a couple of airline accidents. One man we talked with had all the "information" on one of the accidents. "That flight was an extra section," he confided, "and of course those pilots aren't trained like the regulars. He'd probably only been up in that kind of weather three or four times." He went on to tell us how many pilots still fly by the seats of their pants in all kinds of weather and hardly ever look at the instruments.

These comments, we must emphasize, came from one of the town's most respected and successful businessmen, a member of all the clubs, active in many civic doings. He travels by air occasionally, with misgivings. His "informed" remarks, however, are going to result in increased rail travel.

In the other community friends of ours were extremely worried that we were flying back to Washington in weather that was close to minimum. They would have us know that when a pilot took off in that kind of weather he really didn't know where he was going, and that our safe arrival at the other end would be a great miracle.

We've run into similar situations in other places and we've tried, with some success, to set the record straight. These people in smaller towns can generate a lot of business for all airlines. But if the lack of information—and the wealth of misinformation—is as widespread as we've found it, the pickings will be slim. These people need to be told, somehow, what makes an airline tick. Particular emphasis needs to be put on safety, which we have found to be the prime topic of discussion.

Can't something educational be done to sell these communities on air travel?

Here's real cooperation, as reported by one of our foreign correspondents. A British Overseas Airways Constellation which had just landed at Kemajoran Airport, Jakarta, Indonesia, had a slight collision with a KLM Connie preparing to take off. Each plane had a wing tip damaged. After apologizing to the KLM captain, the BOAC pilot offered him his undamaged wingtip. The offer was accepted, and the wingtip fitted to the Dutch plane, thereby enabling it to start its flight.

One of the wags at the Lewis Edwin Ryan advertising agency in Washington (Capital Airlines account) whipped out a humorous radio commercial which, he said with a straight face, would really sell the airline. Here's how it goes:

Announcer: Capital Airlines now brings you the finest in music! From the third movement of Beethoven's ever-loved Fifth Symphony, fourth passage, third note in the sixth bar for oboes, Capital brings you—a moment with Beethoven.

Organ: Beep.

Announcer: Tune in tomorrow, and every day, at this same time, same station, for the next 14 months while Capital Airlines brings you Beethoven's entire Fifth Symphony, note by note, played in a way that each and every one of you can understand, plus commentary by the eminent music authority and critic, Doktor Heinrich von Fayver. Doktor von Fayver.

Dr. VF: Yah, zo—it stinks.

Announcer: Thank you, Doktor. And don't forget, music lovers—the happiest sounds are coming from Capitaliners, so fly Capital and be in tune!

Anyway, it's a different approach—ain't any worse than some we've heard. Don't listen for it, however—it won't be used. Get your Beethoven somewhere else.

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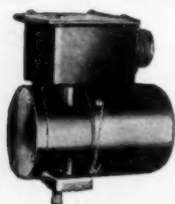


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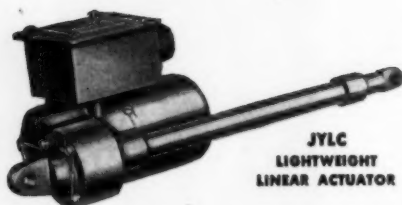
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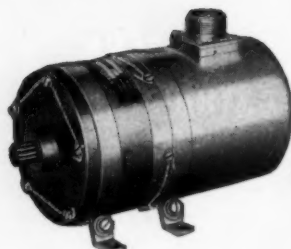
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RELIABLE, PRECISION BUILT, COMPLETE RANGE

Built for utmost flexibility, Barber-Colman actuators combine gear reductions, switching, mounting details, and other design features to meet most aircraft applications in their torque speed class. These actuators are designed for installations subject to extreme temperatures and high altitudes. Barber-Colman actuators are available for either two position or proportioning type control of fuel valves, air valves, or hydraulic valves, dampers, shutters, flaps, trim tabs, camera mounts, gun sights, and antennas.

DESIGN FEATURES

SWITCHING

Barber-Colman Actuators are available with either cam-operated or torque (load) operated switches. Cam-operated switches are preset for desired travel. Torque-operated switches de-energize the actuator when the end of stroke of the valve, flap, shutter, or other driven component is reached; these switches prevent motor overload and provide any travel desired. Auxiliary switches may be included for associated circuits.

GEAR REDUCTIONS

Speed reductions are through hardened, machine-cut gears. A large variety of gear trains provide a wide range of torque (load) speed characteristics. Maximum torque for rotary actuators is 500 lb. in.; maximum load for linear actuators is 200 lb.

CLUTCHES AND BRAKES

Actuators are available with a friction clutch and/or magnetic brake. Actuators with p-m drive motors are wired for dynamic braking.

RADIO NOISE FILTERS

Radio interference suppression to the limits of USAF 7274 or MIL-I-6181 up to 150 mc can be supplied on all actuators. Suppression up to 1000 mc per AN-I-42 or MIL-I-6181 can be supplied on special request. Suppression according to AN-M-40 is also available for series type motors on special request.

POSITIVE LOCKING

For valves and other aircraft components requiring positive locking and accurate positioning within 1 angular degree, the Barber-Colman sector gear mechanism may be specified.

DRIVE MOTORS

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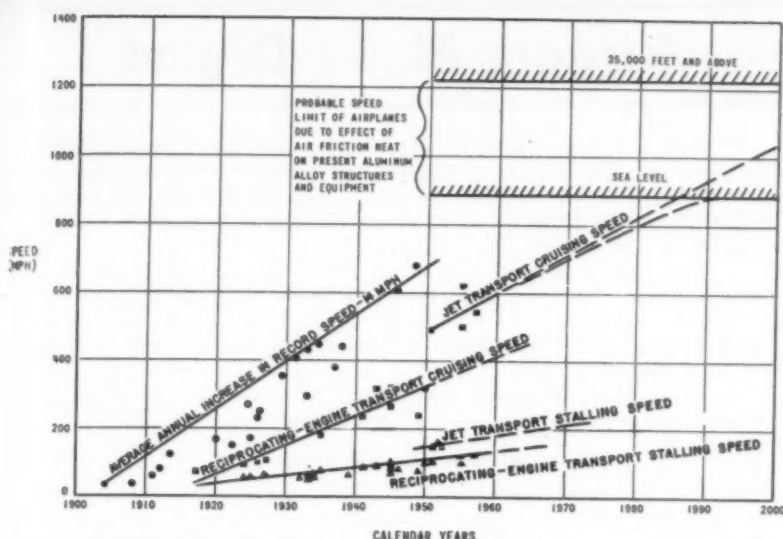
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Many variations of basic design are available to meet different mounting and linkage requirements. Straight or right angle drives; plain, keyed, or splined shafts; and different locations and designs of mounting pads and brackets allow for operation with most valves, flaps, and other aircraft components. All electrical connections are made through standard AN receptacles. The explosion proof enclosures are of anodized aluminum.

INTERNAL RHEOSTATS

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AIRCRAFT PERFORMANCE trends indicate future runway and approach requirements.

Are Airports Ready for Jet Aircraft?

Unique problems confront community air planners: travel habits, runway lengths, field location, etc.

THE approaching day of the jet transport is giving airport planners cause for concern.

The problem already has become acute in Los Angeles, where the city council appropriated \$2,500,000 to build a freeway alongside the Los Angeles International Airport—and now doesn't know what to do about it because the road would limit future runway extension.

Howard Hughes, whose own plans to extend the Hughes Aircraft Co. strip from 9,000 to 15,000 feet would be stymied by the highway development, has made it a public issue by pointing out the predicament Los Angeles might find itself in if the jet transport obsolesces its municipal airport.

You can find more than one viewpoint on what the jet transport will do to airports and travel habits. One school of thought believes that comparatively few jet airports will be needed. Many experts think in terms of only a handful of main terminals which would be centers of local service operations connecting with the 600-mph jet schedules.

Noise Problem?

Some proponents of this theory say the jets can and should be kept away from cities altogether. They admit, however, that civic pride would make it difficult. It is highly unlikely, for example, that Los Angeles and San Fran-

cisco would submit to a joint jet terminal midway or thereabouts between the two points, no matter how logical such a plan might be.

It is becoming increasingly apparent that jet airline scheduled service—when it comes—will be available only to those cities that begin now to take stock of the approach and runway characteristics of their airports.

Douglas Aircraft Co. recently prepared an interesting study on the probable runway requirements for jet airplanes. Drawn up by K. E. Van Every, chief of the aerodynamics section of the El Segundo division, it indicates takeoff and landing field lengths in the order of 15,000 feet will be needed by 1960.

Same Rate of Increase

According to Van Every's study, which shows trends in transport and military aircraft, operating speeds and stalling speeds will continue to increase at approximately the same rate as in the past.

Landing lengths are expected to become even more critical for jet-powered aircraft. High weight per unit of wing area and the absence of reverse-thrust propellers necessitates longer runways. Military drag devices such as parachutes may be used to reduce landing distances, but it will still be desirable to have airports adequate for emergency landings without such auxiliary devices, in

cases where brakes fail or slippery runway conditions exist.

Van Every makes his projections on the basis of consistency shown in past performance. From the time of the first Wright plane, the annual average increase in airplane maximum speeds has been 14 mph. Cruising speeds and stalling speeds have always been proportionate to the maximum speeds. Stalling speeds increase with cruising speeds in a ratio of 1 to 3. Takeoff and landing speeds usually are 20% higher than stalling speeds.

Speed 'Ceilings'

There is nothing to indicate that there may be any appreciable change in the forthcoming years. Possible limitations of sustained high speed may come at 880 mph at sea level and 1,230 mph at 35,000 feet, because of the effect of air friction heat on the strength of present aluminum alloys. On the other hand, it probably won't be long before these limitations will be pushed to higher speeds by development of metals such as titanium, which retain their strength at high temperatures.

Although takeoff and landing speeds are expected to keep pace with cruising speed, possible restrictions are tire limitations and other considerations such as the ability of pilots to land safely at higher speeds.

400 MPH in 1960

In projecting his speed curves based on the annual average 14 mph increase in maximum speeds, Van Every carries reciprocating cruising speed from today's 300 mph to 400 mph in 1960. The jet transport's cruising speed is projected from today's 450 mph to 600 mph in 1960, 700 mph in 1970, 800 mph in 1980, 850 mph in 1990 and 1,000 mph in the year 2000. The jet transport's stalling speed now is approximately 150 mph and that of the 600 mph jet transport of 1960 will be 200 mph.

Report Due Apr. 1 on No-Shows, Oversales

Recommendations on what to do about the problems of no-shows and oversales will be given to the Air Traffic Conference about Apr. 1 by a committee composed of three airline representatives.

The committee, appointed by ATC last December and which has been at work for several weeks, includes Walter Brandenburg, superintendent of payload control for United Air Lines; Earl Robertson, manager of reservations and ticket offices for Northeast Airlines, and Damon F. Averill, American Airlines' Buffalo reservations manager.



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Airport News Digest

CAA's Airports Advisory Committee has unanimously recommended that the CAA Administrator "without delay" determine and designate by categories civil airports he thinks essential to civil air commerce and remove all recapture clauses relative to buildings and airport facilities he believes essential to civil aviation.

The recently released recommendations of the committee, a twelve-man group of airport executives appointed by the CAA Administrator to counsel on airport policy matters, goes on to advise that airports having major overhaul and maintenance facilities for commercial carriers be designated for exclusive civil use.

These recommendations were among a number arrived at by the committee at its Washington, D. C., meeting held Sept. 25-28, 1951.

Airport Categories

The committee recommended further that the Administrator reach an agreement with the military to recognize these categories and statuses of airports:

1. Key civil airports saturated with civil traffic and vital to the national system should be designated for exclusive civil use.
2. Airports available for limited joint use by the military.
3. Airports available for unlimited joint use by the military.
4. Airports available for exclusive military use.

On the subject of military-use agreements at civil airports, the majority of the committee's members were of the opinion that political sub-divisions, such as states and cities, should be free to negotiate with the Federal Government on use of their airports. Members were agreed that this use should be reviewed by CAA to prevent discrimination against civil aviation. The committee saw the CAA as a "court of appeals" relative to military use of civil airports.

Panel Endorsed

Among the committee's recommendations is a high endorsement of the Airport Use Panel, group which has been instrumental in determining feasibility of Air Force recapture of military airports declared surplus after the war and taken over by civil agencies. But the committee, recognizing military need for airports and related facilities, was of the unanimous opinion that better coordination should be effected in Washington prior to negotiations between Federal Government representatives and local owners of airports. The committee declared that this greater coordination would avoid confusion at "lower echelons."

Recommendations

The committee gave advice on the following subjects:

• **Noise.** Recommendation: Although a careful study should be made of noise in connection with approach protection and general airport zoning, the committee is unable to recommend definite action for solving the problem.

• **Labor rates.** Recommendation: The Administrator should attempt to coordinate with the Secretary of Labor a policy to establish minimum wage rates under the Federal Airport Act, in accordance with requirements of the Davis-Bacon Act, so that airport construction wages will be consistent with other wage rates of a similar character. If the result cannot be obtained this way, the committee recommends that legislation be proposed to make labor provisions of the Federal Airport Act similar to those of the Federal Highway Act.

• **Removal of Obstructions.** Recommendation: Further study of a proposed bill to amend the Civil Aeronautics Act of 1938 which would authorize the Secretary of Commerce to remove obstructions to air navigation and prevent building of future obstructions. The proposed bill, the committee believed, is too broad and could cause dissension locally if the Federal Government were to remove such obstructions as it might see fit.

A. B. Curry, chairman of the Airports Advisory Committee, has announced a proposal that the next meeting of the committee be held in Kansas City, Mo., March 11 and 12.

THE BULLETIN BOARD

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IN FLIGHT

A PAGE FOR ALL PILOTS

New 'Chute

A NEW lightweight, automatic-opening parachute, weighing only 22 pounds, is now being tested in live jumps at Wright Air Development Center's Parachute Test Group Center at El Centro, Calif. Major feature of the new 28-foot chute is the use of 12 conical-shaped guide surfaces (see photo) located around its edge and hanging down from the canopy. These lower opening shock and reduce oscillation. Reduced shock makes possible a lighter construction, accounting for the 20% weight reduction achieved, and reduced oscillations assure better control and safer landings.



CONICAL guide surfaces lower opening shock of new parachute.

The automatic-opening feature makes it possible to preset the chute to open at a range of altitudes, but manual opening is also provided for. Metal stiffeners used in earlier parachute packs to maintain their shape have been replaced with cords, which provide a more comfortable pack. More than 400 aerial drop tests were made with rubber dummies on the new parachute, which has been under development for eight months at Wright-Patterson Air Force Base, prior to the start of the current live tests.

Gun Gases

ONE of the unique and seldom discussed hazards facing the pilot of a jet fighter aircraft is that of explosions resulting from the accumulation of combustible gases originating during gun firing. The possibility is so real that the Navy's Air Development Center in Jacksonville, Pa., has devoted considerable time to studying the problem and attempting to find practical solutions.

Fuselage-buried gun compartments in jet fighter aircraft serve as a storage area in which these gases accumulate until heated gun parts, electronic equipment, or other heat sources ignite the gases and cause a serious explosion, according to a paper prepared by three Navy engineers, J. J. Horan, J. R. Onderdonk, and E. Witkin, and presented before The Institute of the Aeronautical Sciences.

Incomplete tests show that these gases accumulate in the gun compartment at a rate of about one pound per minute per gun. The gases involved are hydrogen, carbon dioxide, carbon monoxide, methane and nitrogen. More than 50% of the gases are carbon monoxide, which is ex-

plosive in mixtures of from 12.5 to 74% when mixed with air. This is followed by hydrogen at 19%, carbon dioxide and nitrogen at 14%, and methane at 1%.

Tests by the ADC, using a special gas-detector apparatus developed at the center, have shown that ventilation of the gun compartment shows the greatest promise for minimizing the combustible gas hazard. Other methods, such as the exclusion of oxygen (without which combustion would not take place) from the compartment, the use of inert diluents or quenchants, controlled burning or exploding of the gun gas in small volumes, and even provision of spring-loaded doors to relieve the pressure of an explosion, have proved impractical.

The lower explosive limit of gun-gas mixtures, the leanest mixture of these gases with air which will burn, has been established at about 11.3% at sea level, decreasing slightly at altitude. The ADC engineers conclude that adequate ventilation must be provided in these compartments to maintain the average concentration at about 50% of the lower explosive limit, or about 6% total. Some means for mixing the air quickly and thoroughly with the combustible gas at its source is also needed.

High Cost of Flying

PILOTS may have to pay more money for their flight tests, under the terms of a new CAA rule which authorizes a fee of \$7.50 for conducting private and commercial pilot examinations. CAA's ruling is based on the increased time, both in flight and on the ground, required for conducting flight tests under current regulations. Tests for additional aircraft ratings may be charged at a rate of \$5. Tests are still provided free of charge by CAA agents when they can be arranged to suit the applicant's needs.

Radio Checks

SCHEDULED air carrier pilots, operating under Part 61 of Civil Air Regulations, have been relieved of the responsibility for conducting ground checks of certain radio systems prior to take-off on originating flights. Principal equipment involved are units of the Instrument Landing System, the marker beacon and, in the future, distance-measuring equipment.

No means exist in the cockpit to check these items, yet existing regulations include pilot responsibility for checking all "radio" equipment. The new regulation, released as an amendment to Section 61.231, provides that such equipment, "which does not lend itself to ground checks by the pilot and which is comprehensively checked for satisfactory operational performance at the most frequent check period," is outside the meaning of the rule.

Actually pilots should be assured of better "radio" checks as a result of the ruling. Prior to accepting the amendment CAA and industry people set up a new set of minimum standards to be used in checking this type equipment during maintenance activities and set up the frequency at which these checks should be made. Other arrangements are being made to provide the pilot with a means of checking his omnirange equipment.

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J. K. "Jim" Briley
Southwest Airmotive
Love Field, Dallas, Texas
January 26, 1948



T. B. "Tommy" Taft
The BG Corporation
at Dallas, Texas
January 27, 1948



Joel G. Pitts
Braniff Airways
Dallas, Texas
January 27, 1948



W. R. "Bill" Walner
Braniff Airways
Dallas, Texas
January 27, 1948



John H. Sullivan
Braniff Airways
Dallas, Texas
January 27, 1948



W. H. "Bill" Moore
American Airlines
Dallas-Washington
January 28, 1948



Eleanor Crain
American Airlines
Dallas-Washington
January 28, 1948



Vickey Foster
American Airlines
Dallas-Washington
January 28, 1948



Betty Thompson, KLM
Royal Dutch Airlines
at WAC, Wood-Ridge, N. J.
February 2, 1948



W. H. J. Wijnholds
Royal Dutch Airlines
at Wood-Ridge, N. J.
February 2, 1948



John Alden Briggs
The WINGS CLUB
New York City, N. Y.
February 10, 1948



L. A. "Lou" Traxel
at The WINGS CLUB
New York City, N. Y.
February 10, 1948



M. Carl Haddon
Lockheed Aircraft
at Wood-Ridge, N. J.
February 16, 1948



Stuart H. King
Government of India
at WAC, Wood-Ridge, N. J.
February 16, 1948



Betty Lou Turner
American Overseas
LaGuardia Field, N. Y.
February 16, 1948



W. C. "Bill" Lawrence
American Overseas
LaGuardia Field, N. Y.
February 16, 1948

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BOEDY'S ALBUM



John I. Leonard
Office Naval Research
at QB Dinner, New York
February 16, 1948



F. H. "Doc" Longeway (QB)
Civil Aeronautics Admin.
at New York QB Dinner
February 16, 1948



T. D. "Tom" Rae
Grumman Aircraft
at SAE Meeting, New York
February 18, 1948



J. D. "Jim" Redding
Society Automotive Engin.
at WAC, Wood-Ridge, N. J.
February 19, 1948



Joan Keenan
American Airlines
LaGuardia Field, N. Y.
February 19, 1948



Edith Mann
American Airlines
LaGuardia Field, N. Y.
February 19, 1948



Todd G. Cole
Delta Airlines
Haperville, Ga.
March 3, 1948



Helen F. Scott
Chicago & Southern
Memphis, Tenn.
March 4, 1948



Marjorie Ragsdale
Chicago & Southern
Memphis-St. Louis
March 5, 1948



Monta Jane Stout
Chicago & Southern
Memphis-St. Louis
March 5, 1948



Eleanor France
(Mrs. Charles W.)
St. Louis, Mo.
March 5, 1948



Barbara Campbell
Chicago & Southern
St. Louis-Chicago
March 8, 1948



G. Henry Horstmann
Chicago & Southern
St. Louis-Chicago
March 8, 1948



Erna Larsen
American Airlines
Chicago-Buffalo
March 8, 1948

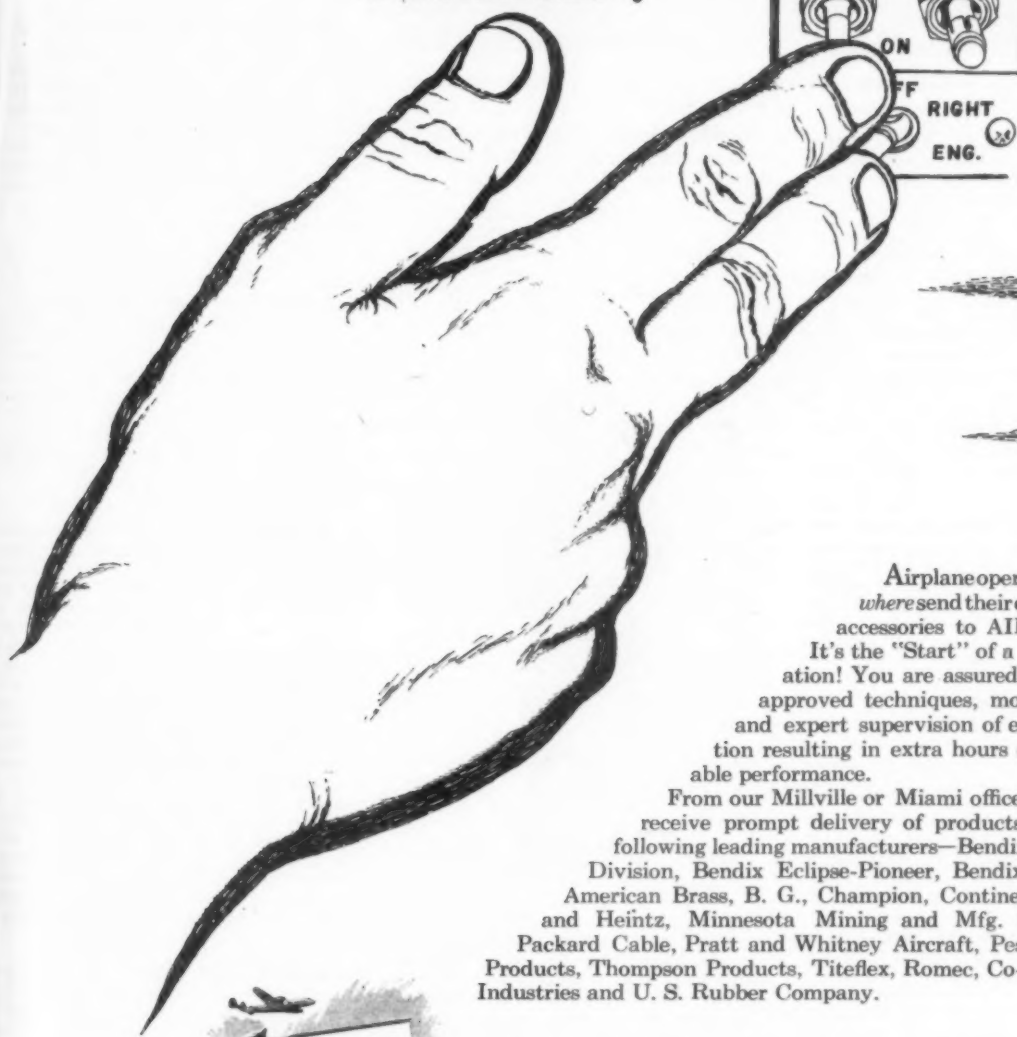


Jean A. Nielson
American Airlines
Buffalo-Newark
March 8, 1948



Arthur Godfrey
American Broadcasting
New York City, N. Y.
March 10, 1948

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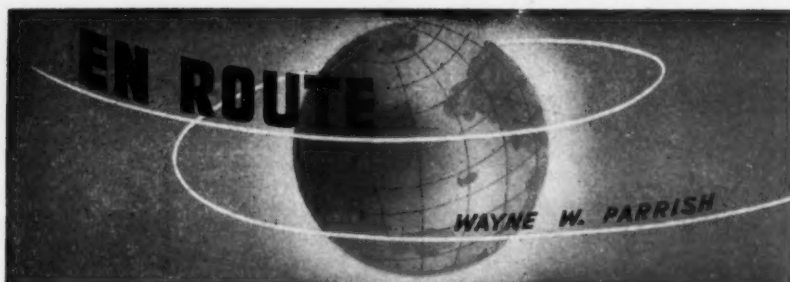
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More on my trip to Yugoslavia last fall:

Lolita: I fell in love with her the moment I saw her at the far end of the long rectangular room. Her hands were folded in front and her head slightly bowed in shyness. Her head was covered with a cloth folded in a manner new to me. She wore a necklace. Her dress was draped gracefully in folds almost to her feet.

She was a peasant girl from the island of Paag off the Dalmatian coast of Yugoslavia, not far from the city of Split. A demure creature, she was in her teens. Like a magnet, she drew me to the end of the room. She was certainly one of the loveliest things I had ever seen. I named her Lolita at once.

She was a piece of sculpture about thirty inches tall and suddenly I wanted her more than anything else in the world. I wanted to take Lolita to America and set her up in my house under a spotlight so my eyes could continue to delight themselves with this exquisite bit of grace and charm. Lolita would make a worthy addition to my collection of ceramics and glass and carvings from around the world.

Bishop's Palace: Let me tell you the romantic story of Lolita and her tragic ending.

I was in Split about three days with Asa Marberger of Yugoslav Airlines. It is a coastal city with a good harbor and fine setting. In the background are the barren mountains. Off the coast are islands. Split resembles in many ways the coastal cities of northern Italy. There are a few palm trees but the area is not tropical.

While walking around town I spotted a poster which I thought was telling about an art exhibition although I couldn't read it. I asked Marberger to translate it. Sure enough, there was to be an exhibition opening that very day in the palace formerly belonging to the Catholic bishop of Split. The Church and Tito haven't seen eye to eye for some years, and most Church buildings have been taken over for other purposes.

Third Floor Up. Marberger and I sought out the bishop's palace, which proved to be near the docks, and walked in. The ground floor was vacant. We went to the second floor but couldn't find anyone. No signs indicating an art exhibition. Marberger then climbed to the third floor and in a minute yelled down for me to come up.

The exhibition was there, all right, but it wasn't supposed to be open until evening. The sculptor was putting finishing touches on a dozen or more bits of sculpture around two big rooms. On the walls were drawings. Marberger told the artist that I was a visitor and that

we had only limited time in town. So I looked around.

Gold Clay. It was then that I discovered my peasant girl from the island of Paag. (Incidentally Nick Bez, president of West Coast Airlines in Seattle, comes from a nearby island also just off Split.) I asked Marberger to find out if it was for sale. He did. And I about melted through the floor. The artist would gladly sell it—for 25,000 dinars. At the official rate of exchange that was \$500. I could think of a lot better uses for \$500.



Lolita

But I continued to admire my Lolita and looked over the other exhibits. The artist lived in Zagreb but he specialized in Dalmatian-coast peasant types. He had a very good touch, I thought. Bit by bit the artist became more interested in my admiration of his work. In due course we weren't even discussing money. With Marberger interpreting, I made a deal to buy Lolita for a mere fraction of the initial price. Not only that, the artist would make some others for me and send them to me in return for food or clothing or whatever I wanted to send.

Big Event: Turns out his name was Peric, which is pronounced Peritch, which was pretty close to my own name. I agreed to come by the next morning for my statue if he would pack it very, very carefully. In the meantime he would arrange to get an export license for me so I could take it out of the country.

I was pleased and happy. I would carry this statue with me to Belgrade and on to Frankfurt, Germany, and get

it to Washington somehow. Next morning I was on hand at the appointed hour to take delivery. Peric had on a tie and a coat. On hand was a representative of the regional arts council, dressed in tie and coat, also. This was a big day for Yugoslavian art in Split. This visitor from U.S.A. had made a big discovery. The artist was on his way to fame and fortune. I was to tell everybody in America about this great artist Peric.

Handle With Care: So with much handshaking and farewells, I trudged down the two flights of stairs with my crate containing Lolita. The crate was bulky and must have weighed about 20 pounds. I lugged it about a mile to the airline ticket office. Marberger gave explicit instructions that the crate was to be handled most carefully on the bus to the airport. And I would take it into the cabin with me.

Lolita was given plush treatment. I finally got to Frankfurt and into the terminal. Then I got her up to the office of Nels David who runs Pan American's Central European region. When Nels told me he was leaving that very night for New York I almost shouted with joy. Would he, please, get Lolita to New York for me because I was going on up to Scandinavia and I couldn't hand-carry this statue all over Europe. I told Nels I'd do anything short of murder and suicide if he would hand-carry Lolita to New York.

Tragedy: So Nels did handle Lolita with great care on PAA to Idlewild. There she was put in customs bond. Several weeks later I arrived at Idlewild, but it was Sunday and I couldn't get Lolita out of bond. So through a lot of effort by the Pan American people, who managed to convince customs that I had declared her value properly, she was released and flown to Washington on the PAA executive plane a few days later. Everybody took such good care of delicate, fragile Lolita.

Then she arrived in my office. I was very happy. My statue had arrived. But I picked up the crate—and my heart sank. All was not well. Something rattled inside. I opened up the crate and sure enough, Lolita was in many pieces. My peasant dream girl had vanished.

Just Plain Clay: My wife often treats me with a mixture of tolerance and condescending charity under such circumstances. She broke the news to me as best she could. Lolita was made of just plain ordinary clay. She had not been baked. She was extremely fragile and could not withstand the test of time. Beautiful she may have been, but clay must be baked to achieve permanence. What a poor shopper I had been—and how much trouble I had caused myself and all of those other people. To PAA, I'm sorry—but a million thanks anyway.

You see, this artist Peric said he would make a bronze statue for me. I hope he is getting it done. The truth is, despite my making a nuisance of myself trying to get a clay figure to the U.S.A., this bird Peric has a very fine touch. His sculptures have real grace. In bronze they should look good. As for clay there's a lot of it along the Adriatic and I'll try to leave it all over there from now on.

NEWSLETTER (Continued from opposite page 3)

1950, include all non-combat major accidents all over the world, including the Far East.

Non-scheduled operators of C-46's are claiming that 80% of their bids for military charters are being rejected as result of CAB's new emergency regulation cutting back maximum operating weight from 48,000 to 45,000 lbs. (see story on page 18) Amos Heacock, head of Aircoach Transport Association, said about 60 C-46's aren't being used by the military because air bids, once lower than rail, are necessarily higher because of new CAB rule. He claimed that prior to CAB regulation, 45 or 46 passengers with 66 lbs. of baggage each could be carried, but that the number now is 37 with 66 lbs. A Pentagon source said, however, that the military, on transcontinental flights particularly, has been limiting passengers to 40 on C-46's and has talked about cutting it to 37.

National Airlines and TWA have received okay from Defense Production Administration for rapid write-off of transport planes for tax purposes. Amounts were not released. Action is follow-up of new policy whereby new planes will be amortized over five rather than seven years.

Pan American World Airways has completed prototype modification of a commercial DC-4 to meet military requirements in event of an emergency. PAA was one of four airlines assigned engineering and development of prototype modifications. United is handling the DC-6, TWA the Constellation and Northwest the Stratocruiser.

S. S. W. Inc., large irregular, has asked Supreme Court to review a Court of Appeals decision which requires CAB action prior to court consideration of the non-sked's \$100 million damage suit against the Air Transport Association and 20 scheduled carriers. Suit is aimed at alleged anti-trust violations by scheduled lines, particularly a Feb. 23, 1949, newspaper ad which the non-skeds claim attempted to prevent fair competition by casting doubt on safety of their operations. S. S. W., along with Air Transport Associates and Golden North Airways, claimed the Appeals Court erred when it found that District Court had jurisdiction but that remedies before the CAB should first be exhausted.

Northwest Airlines has established a military division in its sales department to work with Air Transport Association in providing planes from NWA's air lift pool of seven aircraft for moving troops when requested by the military. J. Quinn Collins, former Pittsburgh sales manager, heads the division with offices in Washington.

American Airlines has revised proposed schedules which will increase transcontinental coach flights from two to four daily. AA will add a third flight Mar. 2 and a fourth Apr. 6 New York-Chicago-Los Angeles. Originally the flights were to be added Feb. 17 and Mar. 2. Under new scheduled, Washington is to be added as a stop on New York-Dallas-Los Angeles on Mar. 2 but coach service won't be available on New York-Washington segment. Equipment will be 70-passenger DC-6's.

CIVIL AERONUTICS BOARD

CAB refused to reopen Mid-West Airlines Renewal case as requested by six Class I mid-western railroads (see page 18) but authorized the rail carriers to appear in remaining procedural step as "friends of the court." Views of the railroads, which will file briefs and participate in oral argument, "may be helpful since this is the first participation by that segment of the transportation industry in renewal cases," CAB said.

New England-Southern States Merger Investigation has been enlarged by CAB to include voluntary merger agreement of National and Colonial. Case now includes voluntary Delta-Northeast agreement, voluntary Colonial-National, CAB investigation of possible National-Colonial-Northeast combination, CAB investigation of possible Delta-Northeast-Colonial combination plus Capital's southern routes 51 and 55. Public hearings are scheduled for Apr. 14.

Temporary trans-Atlantic mail pay for Twa of \$3,388,000 annually, applicable from July 1, 1951, has been recommended by CAB Examiner R. Vernon Radcliffe. According to TWA figures, this would be about \$5,500,000 under current annual mail pay and about \$9,500,000 under that received by Pan American World Airways on the Atlantic.

Delta Air Lines has been directed by CAB to show cause why it shouldn't accept a service mail rate of 53¢ a ton-mile. This would make Delta the ninth domestic trunk line to operate at what CAB considers subsidy-free mail rates.

Additional \$1,001,000 in mail pay for Pan American World Airways' Latin American Division for April, 1948 through November, 1951, has been proposed in a CAB show-cause order. Money is designed to meet a break-even need for the period of \$23,716,000. PAA has received \$22,715,000 in temporary pay for the period.

Application for exemption to operate scheduled passenger coach service between New York and San Juan, P. R., has been filed with CAB by The Flying Tiger Line, certificated domestic all-cargo carrier. Company would utilize DC-4's and may eventually use DC-6's "if, as and when available" at fare not to exceed 3¢ per mile. Minimum of five and maximum of 14 round-trips per week is contemplated. Supported by Government of Puerto Rico, application asked authorization for three years "or for such time as the Board may deem necessary to justify the investment in equipment essential to establishment and development of the proposed operation."

CAB is considering two dates for beginning hearings on application of Braniff and Mid-Continent to merge—Mar. 10 and 19. Proceeding is headed for expeditious handling by CAB and some estimates are that a July 1 decision is not unlikely.

CIVIL

CAA has announced consolidation of safety activities under one chief in each of the seven continental regions, completing a program initiated over a year ago. Regional chiefs are: Region 1, New York, Burleigh Putnam, Jr.; Region 2,

Atlanta, J. M. Leslie; Region 3, Chicago, J. T. Shumate; Region 4, Ft. Worth, M. L. Cunningham; Region 5, Kansas City, R. W. Delany; Region 6, Los Angeles, W. A. Klikoff; Region 7, Seattle, D. R. Nelson. In Washington, two divisions, Air Carrier Safety and General Safety, have been created, and two have been abolished—Airmen and Flight Operations. E. B. Franklin, formerly chief of Flight Operations, becomes chief of Air Carrier, and E. W. Hudlow, formerly chief of Personal Aircraft and Agencies Branch, heads General Safety.

Municipal and Airport Division of American Road Builders' Association has elected Gen. Donald Connolly, Baltimore's director of aviation, and Frank Wiley, director of Montana Aeronautics Commission, as vice-presidents of southern and western districts, respectively.

U. S. exports of civil planes weighing 6,000 lbs. or less during 1951 totaled 433 units valued at \$3,103,848, according to reports filed by eight companies with Aircraft Industries Association. This compared with 1950 figures of 415 units valued at \$2,252,793 reported by 10 companies. Eight included in 1951 report are Aeronca, Beech, Cessna, Ercoupe, Luscombe, Piper, Ryan and Taylorcraft.

Directors of the League of California Cities have passed resolutions expressing appreciation for the consideration given by the California Aeronautics Commission to League recommendations during the period of program and staff reorganization of the commission, and pledging cooperation in the development of the most effective program possible. Richard Graves, the League's executive director, said the action was taken because, for a number of reasons, not all of them warranted by the facts, the League has been identified as an opponent of the commission. He added this was a great exaggeration of the League's position. A report that the League was readying a resolution to abolish the commission was described as unfounded.

LABOR

Members of Air Line Pilots Association reaffirmed 4,601-101 the election of Clarence N. Sayen as president and by 4,597-104 the ouster of David L. Behncke from that office. Legal battle in Chicago's Federal District Court over whether Behncke was legally ousted last summer is still pending.

Twenty airline representatives met with officials of the Railway and Airline Wage Board. RAWB explained its wage policies and its regulations affecting airlines. Agency now has 67 airline wage cases awaiting action.

Resumption of the UAW-CIO walkout against the Douglas C-124 Long Beach plant seemed possible as the union set a Feb. 17 mass meeting to act on WSB recommendations (which are unlikely to come by that date) or to discuss "a further course of action," i.e., setting up of strike machinery. The union is reported willing to have the union shop issue postponed if some agreement can be reached on retroactivity of pay.

IAM-AFL won over the UAW-CIO 226-18 in a National Labor Relations Board election to de-

termine the bargaining agent at Bendix Aviation Corp.'s Montrose Division plant in Montrose, Pa.

WSB panel in the Wright Aeronautical-UAW case has recommended wage hikes of 12 to 23¢ an hour for 11,500 workers. Twelve cents would be retroactive for all workers to Oct. 15 and an additional 2 to 11¢ would go to higher skilled employes as of Jan. 31. Recommendations now go to the WSB itself for approval. C-W, meanwhile, protested to Mobilizer Wilson that a 4¢ productivity hike in the recommendations is illegal.

FINANCIAL

Airlines

Mid-Continent Airlines reported a preliminary 1951 net of \$169,164, or 40.4¢ a share as against a net of \$355,446, or 85.3¢ a share in 1950.

Western Air Lines estimated net income for 1951 equalled \$2.50 a share on operating revenues exceeding \$16 million. A 15¢ dividend will be paid Mar. 15.

Manufacturers

Consolidated Vultee Aircraft Corp. reported a fiscal 1951 net to Nov. 30 of \$7,750,524 on sales of about \$322 million as against a 1950 net of \$10,241,644 on net sales of \$256 million.

North American Aviation had a first quarter net to Dec. 31 of \$1,575,000, or 46¢ a share, on sales of \$52,695,275 as against a net of \$1,335,391, or 39¢ a share, on sales of \$34,066,661 for the same period last year. Backlog has passed \$1 billion, with \$657 million in firm orders and \$392 million being negotiated.

Avco Manufacturing Corp. had a fiscal 1951 net to Nov. 30 of \$10,089,214, or \$1.10 a share, on sales of \$286,589,113.

AROUND THE WORLD

New German airline, when it gets started, will have either all-German management with planes leased from foreign carriers, a joint firm with the Allied and German powers holding equal ownership of the planes, or two companies, one with Franco-British-German money and the other with American-German money, flying in the Western zones. New airline probably will not receive Russian approval to fly into Berlin.

France's Societe de Transport Aerien D'Extreme Orient has ordered four SO-30 Bretagne twin-engine transports for overseas trunk routes.

Several British aircraft firms have organized the Aircraft Research Association to build the largest transonic-supersonic wind tunnel in the United Kingdom. About 35,000 horsepower will be required for operation of the wind tunnel.

Australia now is flight-testing two jet prototypes developed to British specifications. One is a pilotless model.

Britain's Type 171 Bristol helicopter has successfully completed carrier landings and take-off trials for the Royal Australian Navy.

France's Air Minister, Pierre Montel, visited Washington to discuss French production of military aircraft and said his visit was "very successful." He declared France met its 1951 production goals and is ahead of 1952 schedules.

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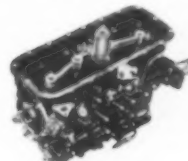
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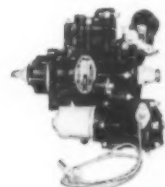
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American Aviation

NEWSLETTER

Entered as Second Class Matter

February 25, 1952

Vol. 15 No. 39

CAB has been told to give "careful consideration" to whether Curtiss-Wright C-46's should be permitted to operate over airports near crowded urban areas.

Rep. Carl Hinshaw (R., Calif.), a member of the House Commerce aviation sub-committee probing air safety, made the recommendation after being told during a hearing that the Commando is "critical" at present flying weights if one engine should fail during take-off or landing.

John M. Chamberlain, director of CAB's Bureau of Safety Regulation, admitted under questioning that the safety code for the C-46 is not as rigid as it is for other transport planes but told the sub-committee, headed by Lindley Beckworth (D., Tex.), that his agency is aware of the plane's defects.

Hinshaw, however, pointed out that a passenger is still a passenger whether he flies on a scheduled or irregular carrier and consequently should be assured of the greatest possible safety.

Of the 149 C-46's in operation by airlines, 53 are used in scheduled domestic cargo service, 13 in scheduled international cargo service and 83 are flown by non-skeds.

In an attempt to regulate agencies and individuals selling reservations for non-sked flights, a bill is to be introduced into the New York State legislature authorizing the state to set up regulations and issue annual licenses and renewals for \$25.

The measure, designed to curb fraud and misrepresentation, would require brokers to post \$5,000 or \$10,000 bonds (depending on whether the city has more than 175,000 residents) with the Secretary of State. If fraud were proved, the bond would be forfeited.

Brokers selling tickets for scheduled flights would not be subject to the law. CAB attempts to restrict the activities of non-sked ticket agents have been largely ineffective, although it did win a recent court case against one such agency ("Newsletter", Feb. 4).

New York State law, however, would be one of the first attempts to regulate these agents and brokers on the state level.

First complete union shop agreement involving a domestic airline has been signed between Eastern Air Lines and the International Association of Machinists-AFL. The pact, covering 2,900 employes in six bargaining units, provides that all present and future workers in those units must become IAM members within 60 days and must remain in the union for the duration of the contract.

National Air Transport Coordinating Committee,

headed by Edward V. Rickenbacker, proposed a plan which would cut traffic at New York's LaGuardia Airport by one-third. Under the program, LaGuardia, which reached 680 flights a day after the shutdown at Newark, will lose 226 of them.

Idlewild would take over 38 international flights, about 50 private flights would be moved to Westchester Airport and other nearby fields, about 10 military flights would be either cancelled or moved and the remaining commercial flights would be cancelled or consolidated or moved to Idlewild, Philadelphia or other airports like Bridgeport, Conn. Non-skeds would not bring any additional flights to LaGuardia.

The military, meanwhile, appealed for permission to reopen Newark Airport for daylight landings of single-engine jet fighters destined for shipment overseas.

Supplemental appropriations request for \$1,620,000

for testing of commercial jet transports by the CAA was presented to Congress by President Truman. Money would be used to qualify CAA and CAB to establish proper certification and operations rules for jet transports.

Industry backing for the appropriation, which would permit tests on two North American B-45 bombers, two Douglas F3D night fighters and the Avro Jetliner, was unanimous.

Settlement of the long-drawn-out dispute of 10,000

UAW-CIO workers at Douglas-Long Beach moved a step nearer as the Wage Stabilization Board made recommendations on all but two vital issues. The union unanimously accepted the recommendations, calling for a 10% and 9c an hour pay boost and full automatic progression for the lower nine labor grades.

WSB appeared ready to postpone a decision on the union shop issue until it has to rule on it in the steel case but was preparing to work out its decision on pay retroactivity. The UAW wants a 6% hike made retroactive to Oct. 16, 1950 and an additional 4% to April 6, 1951. But Douglas opposed retroactivity on grounds that the union refused these boosts when they were offered.

Hearing into procurement irregularities at Air Materiel Command headquarters are slated to get under way within the next 30 days but the material to be covered is of wider scope than had been originally planned.

When the Senate Preparedness Sub-committee scheduled sessions just before Christmas (later postponed), only four or five cases were to be discussed. But Senate investigators have continued their probing at Wright-Patterson and now have found what they consider faulty book-keeping and accounting procedures, as well as "waste" in awarding Air Force contracts.

With USAF Chief of Staff Hoyt S. Vandenberg reported out of his job after his present term expires April 30, aviation circles are speculating on his successor. The four-star general has not yet been invited to remain in his post, even though a Chief of Staff normally gets notice of the Administration's intention to keep him well in advance.

Two names keep popping up as Vandenberg's replacement: Vice Chief of Staff Gen. Nathan S. Twining and the commanding general of the Strategic Air Command, Gen. Curtis E. LeMay. Sources close to Vandenberg predict, however, that he will stay on in the Air Force in a lesser job if he is not renamed. He becomes eligible for full retirement after 30 years of service in June 1953.

Bill to separate air mail pay from subsidies to airlines is having a hard time getting on the House Interstate and Foreign Commerce Committee agenda because of other measures which must be considered first.

The House group, which already has three sub-committees holding hearings, may set up a fourth to consider subsidy separation.

MANUFACTURERS

Renegotiation Board has extended its deadline for filing financial statements again. RB Form 1 must be filed by May 1 by contractors whose fiscal year ended Dec. 31 or before while Form 1B must be filed 60 days after that.

Frigidaire Division, General Motors Corp., which had been slated to produce propeller parts for the Fairchild C-119, will not do so because of the production cutback. Aeroproducts Division will handle all prop production.

American Aviation

NEWSLETTER



Vol. 15, No. 39

WAYNE W. PARRISH, Editor and Publisher

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Stockholders of Elastic Stop Nut Co. of America and American Gas Accumulator Co. have agreed to merge the firms. AGA stockholders will receive 1½ shares of ESNA common for every share they turn in.

Western Sky Industries, a new Oakland, Calif., outfit, has received more than \$3.5 million in sub-contracts to produce wing sections for the Douglas AD-4 and AD-5 attack bombers. Ray T. Elsmore, senior vice-president for Transocean Air Lines, heads the new organization.

PLANES AND EQUIPMENT

All Chase C-123B's are to be equipped with the Westinghouse Decelostat, a device which adjusts braking pressure to runway conditions so that maximum braking may be applied without the danger of skidding after a landing. The Decelostat is applied to the hub of the plane's wheels.

New price of the Aero Commander executive transport is \$66,000 f.a.f., Oklahoma City. Before the price hike, which was caused by higher labor and materials costs, the plane sold for \$49,000.

Sikorsky is still working with CAA to get the S-55 helicopter certificated. Most of the minor problems have been solved to CAA's satisfaction but the matter of controllability at low engine speeds with a rearward center of gravity is still unsettled.

First Wright-licensed engine, the R-1300-1, has been delivered to the USAF by Kaiser-Frazer Corp. Built with Wright parts, the engine, which is used for the North American T-28 trainer, was also the first to be built in Detroit since Korea.

New Army helicopter, the H-25A, is being built by Piasecki in quantity. It is a modified version of the six-place Navy HUP. All Navy HUP-1 deliveries have been completed and Piasecki is working on the -2, which will be the first copter equipped with an autopilot. Tail empennages on either side of the vertical fin have been eliminated on the -2.

Navy has confirmed the existence of the Grumman F9F-6 Cougar, swept wing version of the Panther. Announcement said the plane has a Pratt & Whitney engine and is in the over 600 mph class.

All Douglas DC-6 and Convair 240 operators have changed from conduit to open wiring in the propeller reversing circuits as a result of a CAA order. It resulted from CAB findings that the inadvertent reversing of the number three engine prop caused the National Airlines DC-6 crash at Elizabeth. The new installations will permit ready inspection.

AIRLINES

City and County of San Francisco are suing Western Air Lines for \$28,397 and American Airlines for \$1,087.04, claiming the carriers are delinquent in paying their airport accounts. The lines are testing the legality of new rates started at San Francisco International last year. WAL and AAL claim the new rates discriminate against non-lease holding carriers.

Slick Airways and The Flying Tiger Line are planning to ask CAB for permission to boost freight rates by an average of 10%. Some items will go up as much as 25%.

Trans World Airlines, which owns 55 Douglas DC-3's, has leased two to Northeast Airlines and two more to Wisconsin Central Airlines. No sales are planned, however, until deliveries of Super Constellations and 4-0-4's by Lockheed and Martin are well under way.

Eastern Airlines soon will cancel high-density equipment restrictions for coach operations and will thus be able to use more standard capacity planes for low-cost night service. EAL is also planning to cancel New York-Washington coach fares, extending its other coach fares to December 1953.

American Airlines flew nearly 90 million ton miles of cargo last year for what it claims is a new record. Cargo volume was up 40% over 1950. Some 72.4% of the total volume of cargo went on AAL's 144 combination passenger-freight planes, the rest moving on its 13 DC-4 freighters.

Twenty of Eastern Air Lines' fleet of 49 Douglas DC-3's have been sold to an undisclosed buyer but no further sales are planned in the near future.

MILITARY

USAF is planning to recall five Douglas C-54's on lease to the airlines. In all, the military has 38 C-54's on lease, about evenly divided between scheduled and irregular carriers. Some 60 airline C-54's are in use on the Pacific air lift but the five Skymasters due to be called back are not destined for similar use.

Army Map Service has awarded Rick Helicopters, Inc., of Los Angeles an Alaska survey contract calling for the use of 10 helicopters between May 25 and Oct. 10. It guarantees a minimum of \$316,300 for transporting Army map survey crews and taking altimeter readings at check points. The award is claimed to be the largest single contract ever signed for helicopter service.

CIVIL

CAA has asked Congress for a supplemental \$3,345,870, including \$984,700 for installing already authorized air navigation facilities, \$701,170 for airport war damage claims and \$1,660,000 for the proposed Burke airport to serve Washington.

Air Coordinating Committee's Airport Use Panel has urged Houston, Tex., to use CAA assistance to build a new airport, at the same time continuing plans to improve Houston Municipal.

If the present CAA budget is approved by Congress, CAA's Airport Division airport management unit, which worked to put fields on a self-sufficient or paying basis, will be eliminated. About 15 persons would be affected.

National Aviation Noise Reduction Committee has been set up under CAA sponsorship. Organizations represented include the CAB, ALPA, ATA, AOPA, Aircoach Transport Association, Airport Operators Council, U. S. Conference of Mayors, the Navy and the Air Force.

Annual report of the Air Coordinating Committee urges the government to foster development of commercial helicopters with an eye toward using them in inter-city shuttle service. ACC said commercial operators should be permitted to buy a few transport types in spite of heavy military demands.

CIVIL AERONAUTICS BOARD

A second southern transcontinental interchange to compete with the current National-Delta-American through service was authorized last week by CAB. New operation involves Eastern, Braniff and TWA between Miami, Houston, Dallas, Amarillo, Los Angeles and San Francisco. To facilitate the service, CAB also granted Eastern new route authorization for cross-Gulf service between Miami, Tampa and Houston to be exercised only in connection with through interchanges. Award was by a 3-2 vote with Members Lee, Adams and Gurney forming the majority and Chairman Nyrop and vice-chairman Ryan, the minority. Substantial traffic potential, improved service to the public and effective competition for American Airlines west of Dallas formed the basis of the majority's decision. Nyrop and Ryan contended it is nothing but a new route grant and accused the majority of authorizing competition "for competition's sake."

Deflated by the voluntary Braniff/Mid-Continent merger proposal, the investigation of a possible Continental/MCA merger was dropped by CAB last week. Board vacated an Oct. 23, 1951 order which directed Continental and MCA to show cause why a merger wouldn't be in the public interest. Board said the Braniff-MCA deal can be implemented at a much earlier date than could a Continental/MCA hook-up. In a follow-up, CAB set March 19 as the date for beginning hearings on the Braniff-MCA agreement which has been on file less than a month.

Trans-Atlantic tourist fare resolution of the International Air Transport Association, adopted at Nice, France, two months ago, has been approved by CAB. It was the last legal formality in this country prior to inauguration of the low-fare service on May 1. CAB has favored the plan and in approving it, expressed "complete satisfaction" with IATA's "enthusiasm and co-operation."

Tight CAB policy on summer trans-Atlantic charter operations of non-sked's and so-called "indirect carriers" in effect in 1951, has been reaffirmed for 1952 by the Board. Generally, it limits charter authorizations to scheduled U.S. flag and foreign carriers and prohibits issuance of exhibits to indirect carriers. It is designed to assure fullest possible success of trans-Atlantic tourist services.

American Airlines' proposal for simultaneous carriage of coach and first class passengers on certain coach flights was suspended and reinstated within a 24-hour period by CAB last week. Proposal, which became effective Feb. 18, although schedules do not start until March 2, involves addition of Washington to New York-Dallas-Los Angeles coach flights. On New York-Washington

leg, only first-class fares will apply. Board first suspended the tariff charging possible "unjust discrimination." But by a 3-2 vote, with Members Lee and Adams dissenting, reversed the decision and permitted the tariff to take effect. Lee and Adams said the reversal will encourage elimination of short-haul intermediate coach services.

Pan American and TWA were authorized to suspend trans-Atlantic operations at Philadelphia until 60 days after a decision is reached on renewed certificates. Board voted 4-1 in favor of suspension with Member Joseph P. Adams dissenting. Lack of patronage and subsidy cost to the government were cited by the majority while Adams held the mail pay required is "negligible" in relation to the benefits to the public.

CAB shelved indefinitely the Capital/Braniff interchange agreement for service between the northeast and southwest. Notable for its implications, particularly proposed over-flying of junction points, the interchange was deferred, CAB said, because of a "number of complicating factors." Among these, were the merger deals in which both Capital and Braniff are involved.

Investigation of W. R. Grace-National Airlines stock transactions, instituted in August, 1949, has been terminated by CAB. Aimed at determining if Grace had acquired control of National within the meaning of Section 408 of the Act, the probe grew out of the purchase of 174,000 shares of NAL stock by Grace. Last year, the stock was re-purchased by NAL and the CAB termination action followed because Grace asserted it now holds no stock interest in NAL.

Hearings in the Large Irregular Carrier Investigation are to begin July 7, in Washington, D. C., with follow-up sessions, spaced two weeks apart, to be held in Miami, Los Angeles and Seattle.

LABOR

Lockheed Aircraft Service International has extended its agreement covering 375 IAM-AFL employes to Nov. 30 by granting an 8% wage boost effective Feb. 11 and another 2% June 30 if the WSB approves. Other benefits, including an increase in the shift differential and insurance payments, are subject to WSB approval.

Rohr Aircraft Corp. has signed a new pact with the IAM-AFL calling for a 4% wage hike retroactive to Dec. 24 and an additional 2½% effective Feb. 4. The latter hike must be approved by WSB for Rohr's 5,000 workers.

Eastern Air Lines' new contract with the IAM-AFL not only calls for a union shop and full automatic progression but a 12c an hour hike effective Oct. 1, 1951 and an additional 2c increase July 1. Shift differentials become 7-12c an hour.

Presidential Emergency Board, after blasting the Transport Workers Union-CIO and Pan American World Airways for making mediation "impossible," recommended hikes of 10c for inspectors, 12c for master mechanics, 13c for mechanics first class, 14c for mechanics, 15c for mechanics' helpers and ground service personnel, 14c for port stewards and senior port stewards and \$16 for flight service personnel.

FINANCIAL

Airlines

The Flying Tiger Line reported a first half net to Dec. 31 of \$884,097, or \$1.13 a share, as against a net of \$890,556, or \$1.13 a share, for the same period last year.

Delta Air Lines had a six months net to December 31 of \$784,681, or \$1.57 a share, compared with a net of \$469,255, or 94c a share, for the comparable period in 1950.

National Airlines had a second quarter net to Dec. 31 of \$461,938, or 46c a share, compared with a net of \$473,451, or 47c a share for the same period in 1950.

Manufacturers

Solar Aircraft Co. will pay a 20c regular dividend and a 20c extra dividend April 15 to stockholders of record March 31. Dividends for the fiscal year ending next April 30 total \$1 a share.

Garrett Corp. had a net of \$1,137,000, or \$1.81 a share, for the six months ended Dec. 31, against a net of \$790,000, or \$1.25 a share, for the same period of 1950.

AROUND THE WORLD

BOAC had a nine months net to Dec. 31 of \$1,414,000, compared with a loss of \$8,839,600 for the same period in 1950.

Japan's Aeronautics Board reportedly has 14 applications for internal airline operations to start after the peace treaty goes into effect. Only Japan Air Lines Co., using Northwest Airlines planes, is now operating.

Britain's Bristol Aeroplane Co. has formed a subsidiary in Melbourne, Australia. Chairman is Sir John Storey, who also heads Overseas Corp., Ltd., which previously acted as Bristol agent there.

India has started nationalization of its domestic airlines by taking over the Hyderabad State Government's 72% interest in Deccan Airways.

Canada's Canadair, Ltd., is slated to receive new contracts to produce North American Aviation licensed F-86E Sabres, using American engines (probably the GE J-47), for Britain's Royal Air Force.

China's Civil Air Transport, headed by Claire Chennault, has won the right to appeal a Hong-kong Supreme Court decision awarding 40 transports to the Chinese Communists to the British Privy Council. CAT purchased the planes from the Nationalists as Chiang Kai Shek fled to Formosa.

Himalayan Airways, an Indian carrier, is reported facing receivership. The line started night air mail flights which were later taken over by larger airlines.

French Naval fighter, the Breguet 960 "Vultur," powered by a Mamba turboprop and a Nene jet engine, is reported to have reached 500 mph without using full power during its flight tests.

Australia's Chief of Air Staff, Air Marshal George Jones, is retiring to join Commonwealth Aircraft Corp. after March 1.

France's SNCASO is developing the SO. 4050 "Vautour" swept back twin jet tactical fighter and the SO. 9000 supersonic interceptor.